MOBILE ELECTRONICS

TECHNICAL CATALOG

POCLAIN Hydraulics

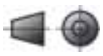
Methodology :
This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain Hydraulics products and specifies installation conditions that will ensure optimum operation.
This document includes important comments concerning safety. They are indicated in the following way:

	Safety comment.

This document also includes essential operating instructions for the product and general information. These are indicated in the following way:

	Essential instructions.
	General information .
	Information on the model number.Information on the model code.
	Weight of component without oil.
	Volume of oil.
	Units.
	Tightening torque.
	Screws.
	Information intended for Poclain-Hydraulics personnel.

The views in this document are created using metric standards.
The dimensional data is given in mm and in inches (inches are between brackets and italic)



Associated documents

Document type	
Generic installation	801478197L

The components of this booklet are not reparable.

Warranty reclaim of any disassembled components will not be accepted.

CONTENT

Electronic Control Units **4**
SmartDrive™ Easy ECU 5
SmartDrive™ CT ECU 8
SmartDrive™ Premier, Master, Offroad ECU 11

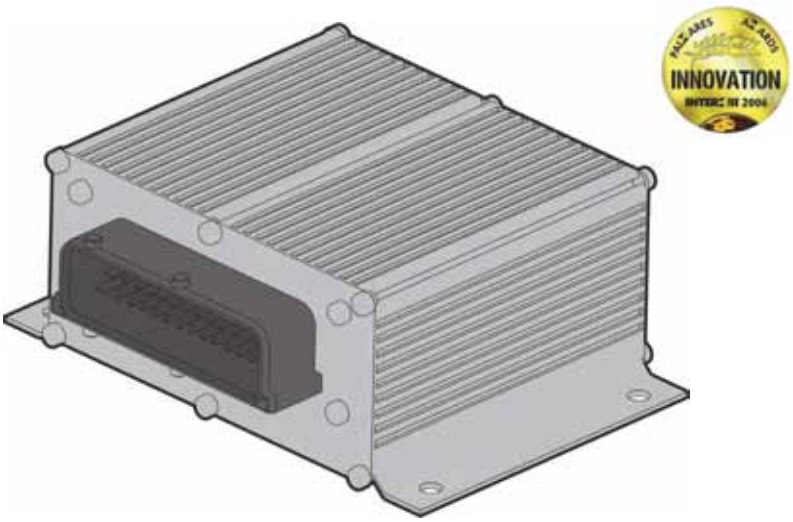
Displays **15**
Display 1.5 15
Display 4.3C 17
Speed sensor T4 19

Electronic components **19**
Speed sensor TR 21
Speed sensor TD 23
Magnetic incremental hollow shaft encoder 25
Rotary potentiometer 27
20 bar pressure sensor 29
40 bar pressure sensor 31
40 bar pressure sensor IP6K9K 33
160 bar pressure sensor 35
600 bar pressure sensor 37
600 bar pressure sensor IP6K9K 39
Digital sensors 41
Analog temperature sensors 43
Analog temperature sensor IP6K9K 45
Temperature switch 47
Joystick with center lock 49
Joystick with Z gate 51
Electronic Travel pedal 53
Travel / brake suspended pedal 56

Connectors **58**
SmartDrive™ Easy main connector 58
SmartDrive Premier, Master, Offroad main connector 59
SmartDrive™Communication connector 61
SmartDrive™ Male communication connector 62
SmartDrive™ CT main connector 64
SmartDrive™ CT communication connector 66
Connector kit 120ΩKit 68
Display 4.3C main connector 70
3-pin Weather Pack connector 71
3-pin Metri Pack connector 72
6-pin Metri Pack connector 73
EN 175301 - 803 style A Connector 74
EN 175301 - 803 style A Connector with diode 75
2-pin AMP Timer Junior connector 77
4-pin Deutsch connector 78
Connector actuator 79
4-pin DIN72585 IP6K9K connector 80

Cables **82**
SmartDrive™ Easy cable 82
SmartDrive™ Master cable 83
SmartDrive™ Off-Road cable 84
SmartDrive™ CT cable 85
SmartDrive™ CT test cable 86
SmartDrive™ PWe test cable 88
SmartDrive™ EASY test cable 90
SmartDrive™ communication cable 92
Pressure sensors cable 93
4-pin M12 cable 94
5-pin M12 cable 95
5-pin M12 120 ohm cable 96
1 signal pedal connection cable 97
2 signal pedal connection cable 98

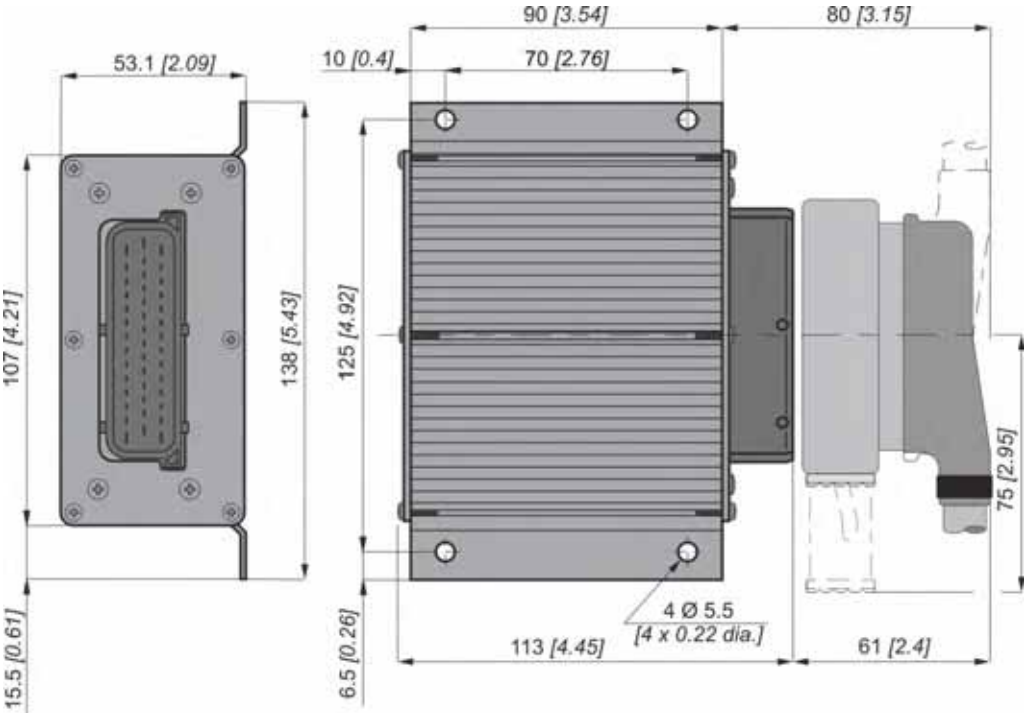
SMARTDRIVE™ EASY ECU



Model code	SD-EASY-PLUS	SD-AUTO	SD-EASY-EXTENDED	SD-AUTO-EXTENDED
Part number	A30499B	A22383E	A42959U	A42978Q

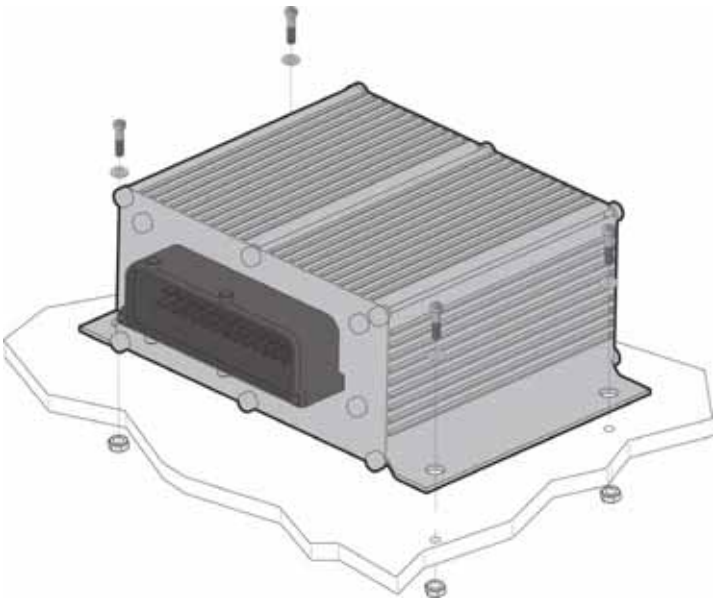
Features		
Supply voltage	12 V DC 24 V DC	
Operating temperature	- 40°C à 85°C [-40°F à 185°F]	
Material	Aluminum	
Mass	0.5 kg [1.1 lb]	
Mounting	4 x Ø 5.5 mm *4 x [0.22" dia.]*	
ECU regulator protection index with its connectors	IP 65(weather proofing)	
Maximum current	14 A	
Electrical protection	Excess voltage, reverse polarity, short circuit	
Microprocessor	16 bits	
Microprocessor frequency	25 MHz	
Flash memory	128 Ko	256 Ko
ECU programming	Programming with a PC using the PHASES™ software application	
ECU set-up	Set-up with the software PHASES™ or the HHT	
Electromagnetic compatibility	• IEC CISPR 25 : Measure of electromagnetic and radiated emissions. • ISO 11452 : Susceptibility to the radiations of electric fields. • ISO 7637 : Immunity to transitory overvoltage. • ISO10605 : Immunity to electrostatic discharges.	

Overall dimensions of the ECU regulator



Installation

Chassis fixing



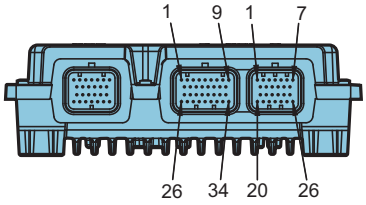
	Quantity	Class	N.m *[lb.ft]* ± 10 %
M 5	4	8.8	10±1 *[7.37±0.73]*

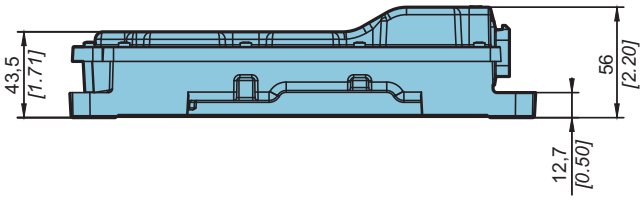
Electrical connections		Commercial name	Part number	
SmartDrive™ Easy cable	1 m	CABLE-SD-EASY-42-1000	A20311C	page 82
	5 m	CABLE-SD-EASY-42-5000	A20313E	
42-pin connector		KIT-CONNECTEUR-MAIN-SD-EASY	A02809D	page 58
Communication male connector		KIT-CONNECTEUR-MALE-COM-SD	A50515H	page 62
Communication connector		COM-SD-CONNECTOR-PLUG	007142204Q	page 61
SmartDrive™ communication cable	1 m	COM-CABLE-SD-1000	A20360F	page 92
	5 m	COM-CABLE-SD-5000	A20361G	

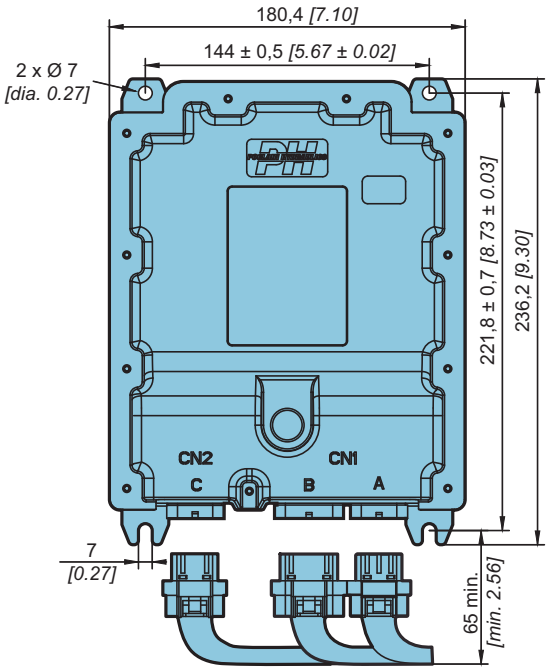
SMARTDRIVE™ CT ECU

Commercial name		SD-CT-200	SD-CT-300
Part number		A46841P	A46842Q
Operating voltage		8 V to 32 V	
Operating temperature		- 40°C to 85°C [-40 °F to 185°F]	
Overall dimensions		See below	
Material		- Aluminum $AlSi_9Cu_3$ (Box) - PA66 plastic with 20% of fiberglass (cap) - Silicon (seal)	
Mass		1,270 kg ±10% *[2,76 lb]* ±10%	
Mounting		4 x Ø 7 mm *4 x [0.275" dia.]*	
Controller Ingress Protection with counterpart connectors mounted		IP 67 (according to EN60529 oct 1992)	
Max. quiescent current consumption (ignition switched off)		5 mA	
12V system max current		35,4 A	
24V system max current		17 A	
Maximum usage profile:	12V System: (Supply voltage 16V)	- 6 HSD PWM outputs 400Hz, 95% 8 Ω loads - 4 HSD digital outputs on, 6.15 Ω loads	- 8 HSD PWM outputs 400Hz, 95% 8 Ω loads - 4 HSD digital outputs on, 6.15 Ω loads - 4 HSD digital outputs on, 8Ω loads
	24V System: (Supply voltage 32V)	- 6 HSD PWM outputs 400Hz, 95% 32Ω loads - 4 HSD digital outputs on, 32Ω loads	- 8 HSD PWM outputs 400Hz, 95% 32Ω loads - 8 HSD digital outputs on, 32Ω loads
Performance level		Capacity to reach PL d level according to ISO13849:2006 standard	
Mean Time To Failure (MTTF)		85,1 years (ambient temperature of 40°C *[104°F]*) with operating profil of 11,87% (4 hours per day, 5 days per week, 52 weeks per year)	66,7 years (ambient temperature of 40°C *[104°F]*) with operating profil of 11,87% (4 hours per day, 5 days per week, 52 weeks per year)
Mean Time To Dangerous Failure (MTTFd)		224.2 years	173.1 years
Diagnostic Coverage (DC)		90,9% (medium)	90,7% (medium)
Category		2	2
Electrical protection		Over-voltage, reverse polarity, ground and battery short circuit	
Microcontroller		One 32 bits microcontroller and one 8 bits microcontroller	
ECU programming		Programming with a PC using the PHASES™-CT software application	
ECU set-up		Set-up with the software PHASES™-CT	
Universal inputs (UN)		9	15
Analog inputs (AN)		11	17
Frequency inputs (FIN)		5	8
Wake-Up Input (WUI)		1	1
Ground sense input (GND_SENSE)		1	1
HSD PWM 2A outputs		6	8
HSD DIG 2,6A outputs		4	4
HSD DIG 2A outputs		0	4
Low Side Digital output (LSD) 4A		0	3
Low Side Digital output (LSD) 5,2A		3	3
Sensor supply 5V		1	1

Overall dimensions of the ECU



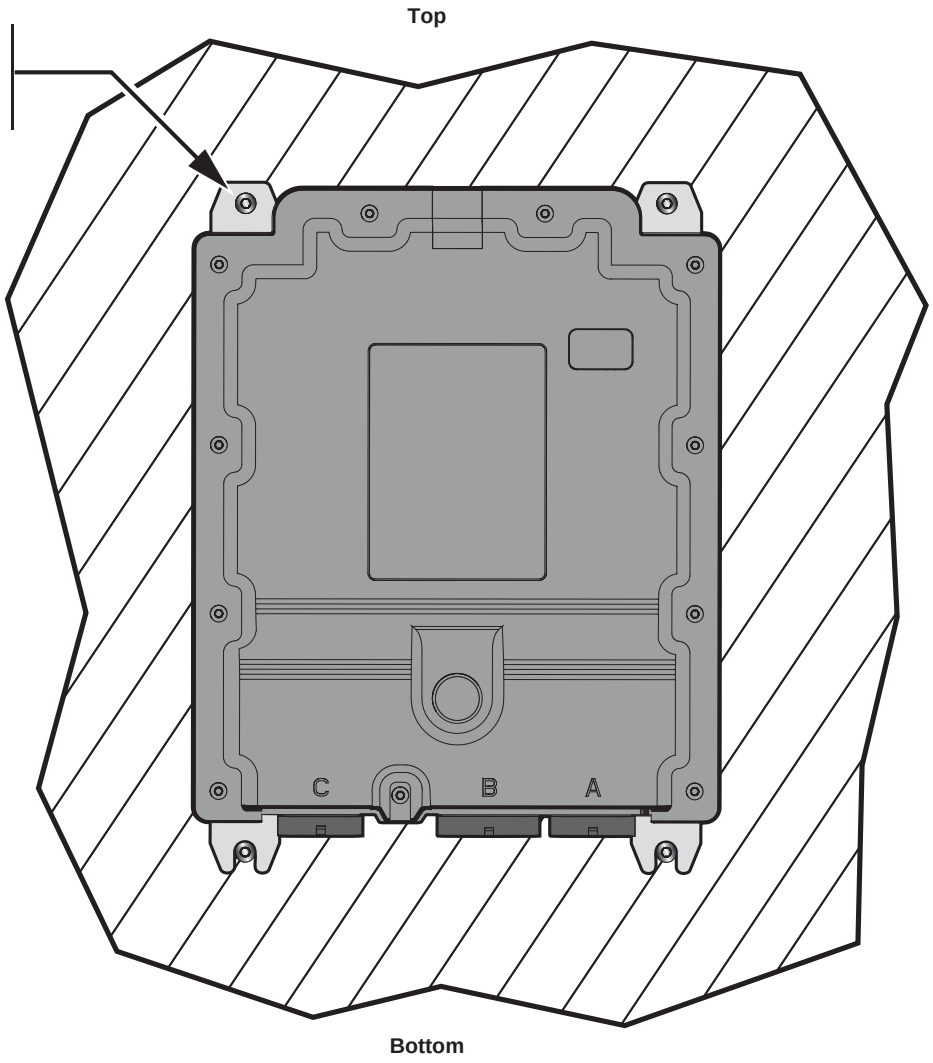




Fitting the controller

The controller must be fixed on a rigid support. Make sure that there is enough space to fit the connector (min. 65 mm *[min. 2.56 in]*).
The controller shall be preferably mounted in vertical position (connectors at the bottom) to enhance ventilation and avoid dust accumulation on cooling fins.
The controller's housing has to be connected to the ground (chassis) of the vehicle and to be installed on a flat surface (flatness of 0,5/ 100x100mm *[3.94x3.94 in]*).

Screw (X4): M6
Nut (x4): M6
Shim (x4) : M6
Tightening torque: 6 Nm



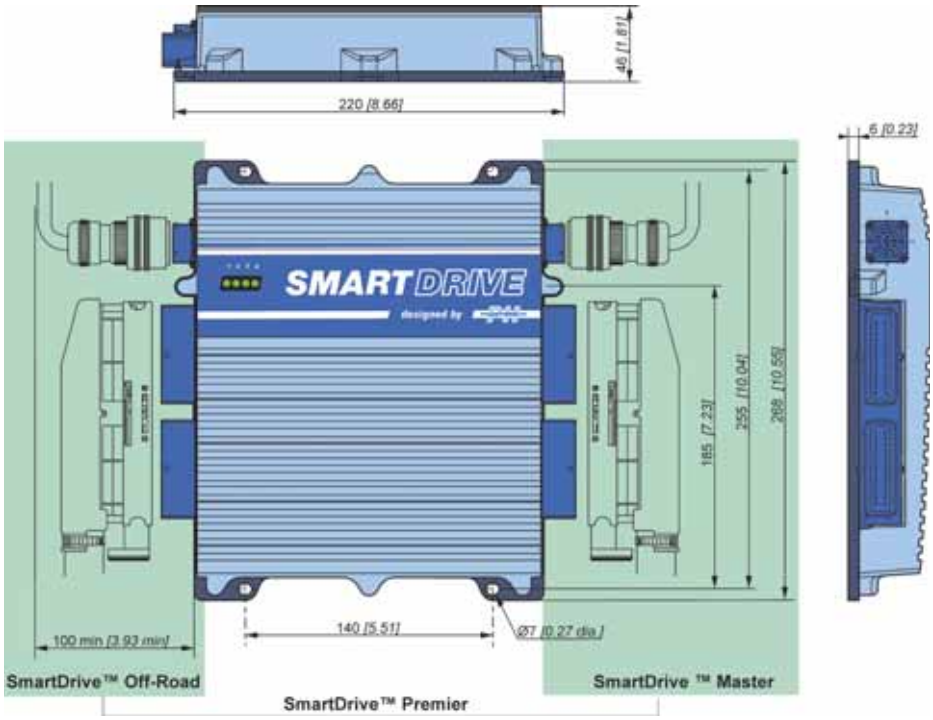
Electrical connections	Commercial name	Part number	
SmartDrive™ CT main connector	KIT-CONNECT-SD-CT-200	A48149L	page 64
	KIT-CONNECT-SD-CT-300	A48140B	
SmartDrive™ CT communication connector	KIT-CONNECT-COM-M-SD-CT	A48693C	page 66
Connector kit 120Ω	KIT-PLUG-120-DTM-2S	A52539H	page 68
SmartDrive™ CT-200 cable	CABLE-SD-CT-200-60-5000	A48878D	page 89
SmartDrive™ CT-300 cable	CABLE-SD-CT-300-86-5000	A48877C	page 85

SMARTDRIVE™ PREMIER, MASTER, OFFROAD ECU

Commercial name	SD-Off-Road	SD-Master	SD-Premier
Part number	001142255G	001142254F	A11999S

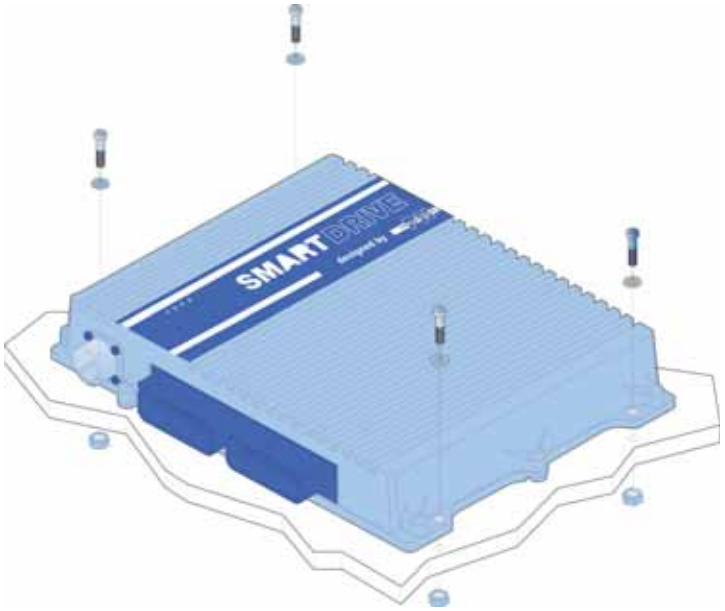
Features			
Supply voltage	12 V cc - 24 V cc		
Operating temperature	-25 °C to 70 °C *[-13 °F to 158 °F]*		
Material	Aluminium		
Mass	1.850 kg *[4.07 lb]*		
Mounting	4 x Ø 7 mm *4 x [0.28 dia.]*		
Protection index of ECU with its connectors	IP 65(weather proof)		
Current	8 A	14A	20A
Electrical protection	Excess voltage, Inverter Polarity		
Microprocessor	16 bits		
Microprocessor frequency	20 MHz		
ECU setup	with a PC or setup terminal		
Electromagnetic compatibility	• IEC CISPR 25 : Measure of electromagnetic and radiated emissions. • NF R 13-004-3 : Susceptibility to the radiations of electric fields. • ISO 7637 : Immunity to transitory overvoltage. • ISO 10605 : Immunity to electrostatic discharges.		

Layout of SmartDrive™ Premier box



Installation

Chassis fixing



	Quantity	Class	N.m *[lb.ft]* ± 10 %
M 6	4	8.8	10±1 *[7.37±0.73]*

Electrical connections		Commercial name	Part number	
56-pin main connector		KIT-CONNECTOR-MAIN-SD	007142203P	page 59
Communication connector		COM-SD-CONNECTOR-PLUG	007142204Q	page 61
SmartDrive™ Master cable	1 m	CABLE-SD-MASTER-56-1000	A20309A	page 83
	5 m	CABLE-SD-MASTER-56-5000	A20310B	
SmartDrive™ Off-Road cable	1 m	CABLE-SD-OFFROAD-56-1000	A22473C	page 84
	5 m	CABLE-SD-OFFROAD-56-5000	A22475E	
SmartDrive™ communication cable	1 m	COM-CABLE-SD-1000	A20360F	page 92
	5 m	COM-CABLE-SD-5000	A20361G	

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

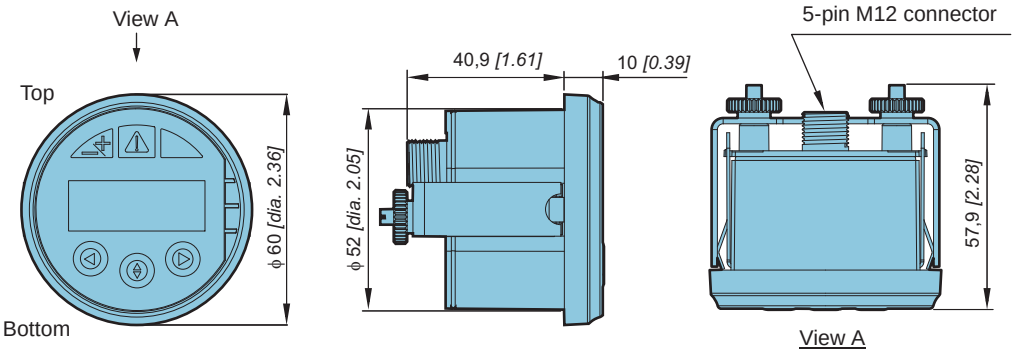
DISPLAY 1.5

SD Display 1.5	
Function	Displays informations (engine or pump RPM, pressure, error codes and their designations...)
Part number	A47449A

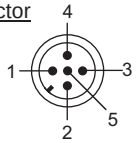
Features		
Electrical data	DC power supply	9 to 60 V
	Current consumption at 24 V	<100 mA
	Program flash memory	96 kB
	EEPROM memory	64 kB
	SRAM memory	3.3 kB
	Screen	Backlighted
	Display type	LCD, 2 x 8 characters
	Keys	3 (illuminated)
	Light indicators	3
Mechanical data	Operating temperature	- 20 °C to + 70 °C *[-4 °F to 158 °F]*
	Weight	63 g
	Mounting	Mounting hole ∅ 53 mm
	Degree of protection	IP 65 on the front; IP54 on the back
Interfaces/Protocols	CAN	1 (ISO 11898, 2.0B)
	Layer 2, CANopen, J1939	✔

Accessory	Commercial name	Part number	
5 pin M12 cable	CABLE-M12-180°-2000-5PT	A19974L	page 95
5 pin M12 120 Ohm cable	CABLE-COM-M12-CAN-120	A25657N	page 96

Layout



5-pin M12 connector



1: Ground
2: VDC
3: CAN GND (internally connected to ground)
4: CAN H
5: CAN L

Description

N°	Function
①	Error light indicator
②	Tuning light indicator
③	''Information'', ''Parameter'' or ''Error code'' line
④	''Value'' or ''Error identification'' line
⑤	''Previous'' or ''Decrease of the value'' key
⑥	''Enter'' or ''Exit'' key
⑦	''Next'' or ''Increase of the value'' key

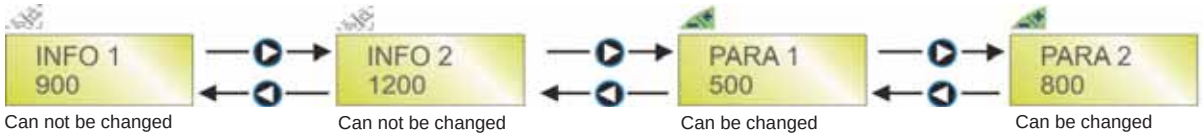
Functioning

Display the Informations and the Parameters

Press the key and to navigate into the Informations and the Parameters.

When the tuning light signal is off the SD Display 1.5 displays an Information ③ (the value ④ can not be changed).

When the tuning light signal is on the SD Display 1.5 displays a Parameters ③ (the value ④ can be changed).



Tune the Parameters values

Only the Parameters values can be tuned (the tuning light indicator is on .

1 - Press the key to enter into the tuning mode.

The tuning light indicator flashes

2 - Press the key to increase the value ④, or the key to decrease the value ④.

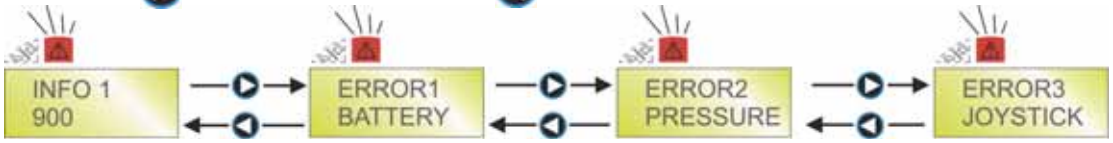
3 - Press the key to exit from the tuning mode.

The tuning light indicator stops flashing (but it still on).

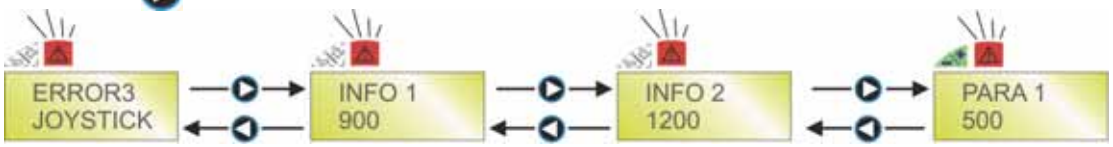
Display the Error(s)

The flashing error light indicator indicates the presence of error(s).

1 - Press the key to display the errors(s) and to come back into the previous error(s).



2 - Press the key to display the Informations and the Parameters.



The error light indicator is off when the error(s) is(are) corrected.

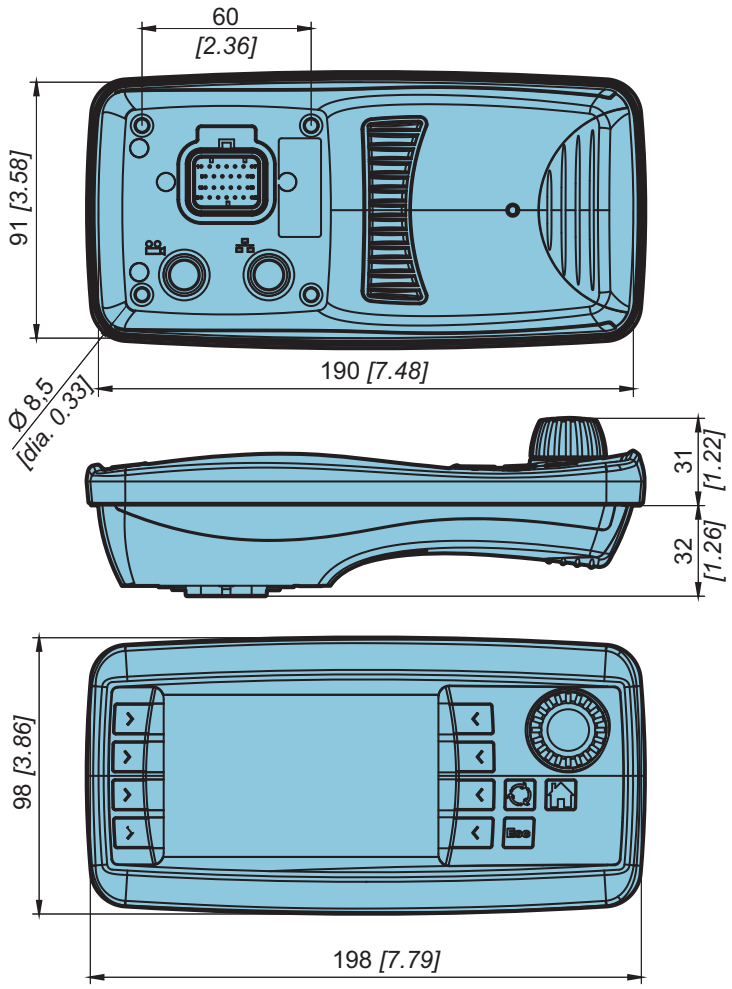
DISPLAY 4.3C

SD Display 4.3C	
Function	Displays informations (engine or pump RPM, pressure, error codes and their designations…)
Part number	A48371C

Features		
Electrical data	DC power supply	9 to 36 V
	Current consumption at 24 V	≤ 220 mA when on
		≤ 38 mA when contact off less than 2 hours
		≤ 1 mA when contact off more than 2 hours
	Program flash memory	512 MB
	EEPROM memory	32 kB
	SRAM memory	128 MB
	Screen	Backlighted
	Display type	4.3'' color TFT
	Keys	11 (illuminated)
	Incremental potentiometer	1 (illuminated)
Mechanical data	Operating temperature	- 30 °C to + 65 °C *[-22 °F to 149 °F]*
	Weight	430 g *[0.95 lb]*
	Mounting	Mounting hole or RAM-Mount
	Degree of protection	IP6k5 and IP6k7 according to ISO 20653
Interfaces/Protocols	CAN	1 (ISO 11898, 2.0B)
	Layer 2, CANopen, J1939	✔

Accessory		
Connector	A49050Q KIT-CONNECT-DISPLAY-4.3C	page 70
Panel mounting accessory	A53628R FIXA-SD-DISPLAY-4.3-PANEL	
RAM mounting accessory	A53629S FIXA-SD-DISPLAY-4.3-RAM	

Layout



Pin	Function	Description
1	VCC	Supply voltage +
2	Ign. Input	Ignition Input
3	GND	Supply voltage -
4	CarGND	Chassis ground
8	CAN1H	CAN_H
9	CAN1L	CAN_L

Description

N°	Function
①	«Back in main menu» key
②	”Enter” or ”Exit” key
③	”Previous” or ”Decrease of the value” key
④	”Next” or ”Increase of the value” key

SPEED SENSOR T4

✔ **No detection of the rotation direction.**

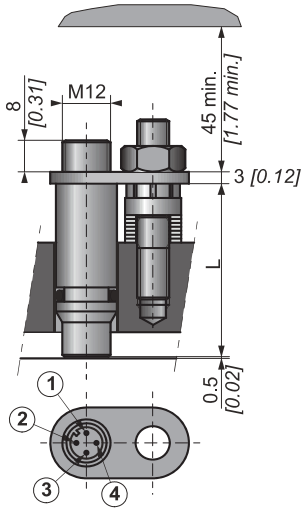
Commercial name	**T4 SENSOR 12-44**	**T4 SENSOR 12-53**	**T4 SENSOR 12-62**
Part number	A22082C	A22083D	A22084E
Lenght **L**(*)	44 *[1.73]*	53 *[2.09]*	62 *[2.44]*
Function	Detect movements : rotation speed		
Compatibility	Electronic transmission management		

(*) : According to the size of the motor, consult your Poclain Hydraulics sales engineer

Features	
Supply voltage	8 - 30 V
Output type	- 1 push-pull square frequency signal - Maximum load current: 20 mA - Voltage at low state: < 1.5 V - Voltage at high state: > (power supply voltage - 3.5 V)
Maximum range	1.15 mm *[0.045"]*
Current consumption	20 mA max.
Frequency range	0 to 15 kHz
Operating temperature	- 40°C to + 125°C *[- 40°F to 257°F]*
Material	Stainless steel
Protection rating	IP68 (sensitive side) / IP67 (connector side)
Electrical protection	Reverse polarity

Signals are not protected against short circuit to ground or supply.

Layout



Installation

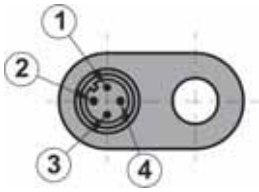
Disconnecting the accessories and speed set up

In the case of motors predisposed to speed, the existing shutter needs to be removed and eliminated before installing the sensor and its attachment device.

To install the sensor, see the ''Installation guide'' brochure No. 801478197L.

Connection of the speed sensor

Remove the plastic plug on the connector.



Function	Pin number
Power supply	1
Not present	2
Ground	3
Square frequency signal	4

For the connection of connectors, please refer to the connection table and the general cabling plan contained in the installation brochure for your transmission.

Electrical connections	90°	180°
Commercial name	ELEC-CABLE-M12-90°-5000	ELEC-CABLE-M12-180°-5000
Part number	A04999J	A07468S
	page 94	page 94

In case of using an M12 90° cable (A04999J), pay attention to the alignment of the elbow with the sensor´s bracket to avoid twisting the sensor´s connector pins.

SPEED SENSOR TR

✔ **Detection of the rotation direction.**

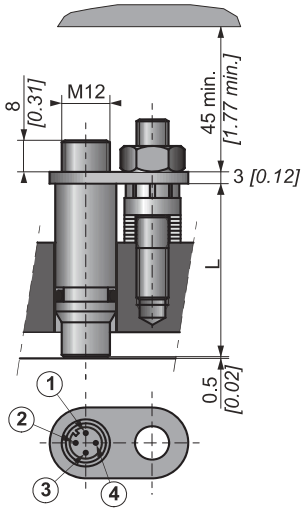
Commercial name	TR SENSOR 12-44	TR SENSOR 12-53	TR SENSOR 12-62
Part number	A04996F	A04997G	A06266L
Lenght **L**(*)	44 *[1.73]*	53 *[2.09]*	62 *[2.44]*
Function	Detect movements : rotation speed and rotation direction		
Compatibility	Electronic transmission management		

(*) : According to the size of the motor, consult your Poclain Hydraulics sales engineer

Features	
Supply voltage	8 - 32 V
Output type	- 1 push-pull square frequency signal - 1 push-pull direction signal - Maximum load current: 20 mA - Voltage at low state: < 1.5 V - Voltage at high state: > (power supply voltage - 3.5 V)
Maximum range	1.15 mm *[0.045"]*
Current consumption	20 mA max.
Frequency range	0 to 15 kHz
Instantaneous frequency deviation	10% with sensor mounted on Poclain Hydraulics motors
Operating temperature	- 40°C to + 125°C *[- 40°F to 257°F]*
Material	Stainless steel
Protection rating	IP68 (sensitive side) / IP67 (connector side)
Electrical protection	Reverse polarity

Signals are not protected against short circuit to ground or supply.

Layout



Installation

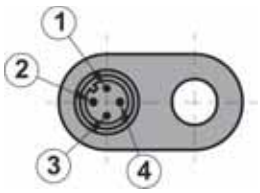
Disconnecting the accessories and speed set up

In the case of motors predisposed to speed, the existing shutter needs to be removed and eliminated before installing the sensor and its attachment device.

To install the sensor, see the "Installation guide" brochure No. 801478197L.

Connection of the speed sensor

Remove the plastic plug on the connector.



Function	Pin number
Power supply	1
Direction signal	2
Ground	3
Square frequency signal	4

For the connection of connectors, please refer to the connection table and the general cabling plan contained in the installation brochure for your transmission.

Electrical connections	90°	180°
Commercial name	ELEC-CABLE-M12-90°-5000	ELEC-CABLE-M12-180°-5000
Part number	A04999J	A07468S
	page 94	page 94

In case of using an M12 90° cable (A04999J), pay attention to the alignment of the elbow with the sensor´s bracket to avoid twisting the sensor´s connector pins.

SPEED SENSOR TD

✔ **Detection of the rotation direction.**

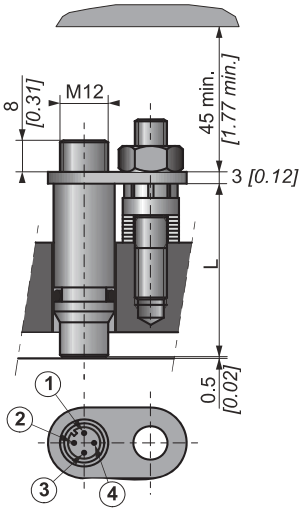
Commercial name	TD SENSOR 12-44	TD SENSOR 12-53	TD SENSOR 12-62
Part number	A38514N	A38515P	A38516Q
Lenght **L**(*)	44 *[1.73]*	53 *[2.09]*	62 *[2.44]*
Function	Detect movements : rotation speed and rotation direction		
Compatibility	Electronic transmission management		

(*) : According to the size of the motor, consult your Poclain Hydraulics sales engineer

Features	
Supply voltage	8 - 32 V
Output type	- 2 push-pull shifted square frequency signals (phase shift from 25° to 155°) - Maximum load current: 20 mA - Voltage at low state: < 1.5 V - Voltage at high state: > (power supply voltage - 3.5 V)
Maximum range	1.15 mm *[0.045"]*
Current consumption	20 mA max.
Frequency range	0 to 15 kHz
Instantaneous frequency deviation	10% with sensor mounted on Poclain Hydraulics motors
Operating temperature	- 40°C to + 125°C *[- 40°F to 257°F]*
Material	Stainless steel
Protection rating	IP68 (sensitive side) / IP67 (connector side)
Electrical protection	Reverse polarity

Signals are not protected against short circuit to ground or supply.

Layout



Installation

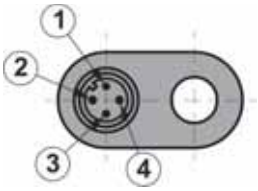
Disconnecting the accessories and speed set up

In the case of motors predisposed to speed, the existing shutter needs to be removed and eliminated before installing the sensor and its attachment device.

To install the sensor, see the "Installation guide" brochure No. 801478197L.

Connection of the speed sensor

Remove the plastic plug on the connector.



Function	Pin number
Power supply	1
Square frequency signal n°2	2
Ground	3
Square frequency signal n°1	4

For the connection of connectors, please refer to the connection table and the general cabling plan contained in the installation brochure for your transmission.

Electrical connections	90°	180°
Commercial name	ELEC-CABLE-M12-90°-5000	ELEC-CABLE-M12-180°-5000
Part number	A04999J	A07468S
	page 94	page 94

In case of using an M12 90° cable (A04999J), pay attention to the alignment of the elbow with the sensor´s bracket to avoid twisting the sensor´s connector pins.

MAGNETIC INCREMENTAL HOLLOW SHAFT ENCODER

✔ **High resolution**

Commercial name	**ENCODER-HOLLOW-3600-12-2000**
Part number	A38403S
Hydraulic motors compatibility	MS18; MS35; MK35; MK47*
Function	Detect movements : rotation speed and rotation direction
Compatibility	Electronic transmission management

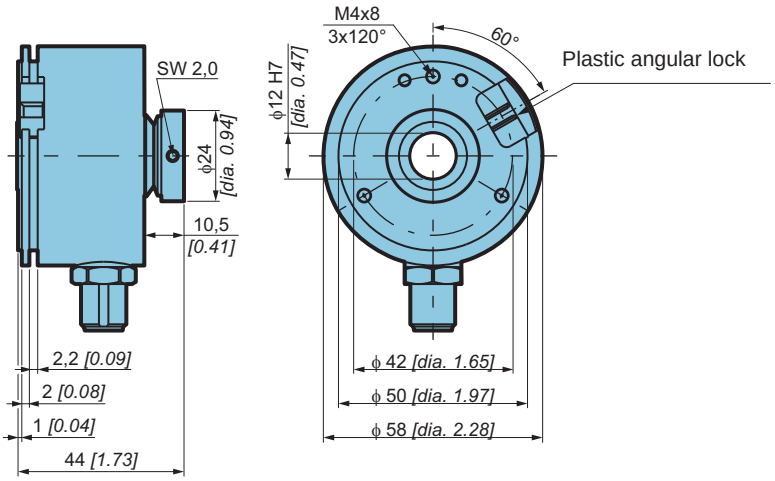
* In case of request for another motors, please contact your Poclain Hydraulics application engineer in matter of feasibility.

General Features	
Power supply voltage (+Vs)	10 - 30 VDC
Number of pulses per revolution	3600
Frequency dither	± 15%
Supply current (no load)	15 mA at 24 VDC
Output type	Push-pull
Max output current	30 mA per channel
Low level max	2,5 V
High level min	+Vs - 3,7 V
Switching frequency	320 kHz max
Electrical protection	short circuit and reverse polarity

Mechanical Features	
Max revolutions	6000 rpm
Protection	IP65
Material	aluminium
Operating temperature	-20°C to +85°C *[-4°F to 185°F]*

Ambient conditions	
Vibration (sine)	IEC 60068-2-6 (<= 300 m/s^2 / 10 - 2000 Hz)
Vibration (random)	IEC 60068-2-64 (<= 0,1 g^2/Hz / 20 - 2000 Hz)
Shock	IEC 60068-2-27 (<= 1000 m/s^2 / 6 ms)
Bump	IEC 60068-2-29 (<= 1000 m/s^2 / 2 ms)
EMC immunity	EN 61000-6-2
EMC emission	EN 61000-6-3

Layout



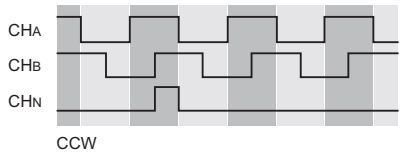
Connection of the encoder

The encoder has a cable with following parameters:

Lenght	2 m
Diameter	5,0 mm + 0,4 mm
Material	PUR, shielded cable with 5 wires
Wire section	0,14 mm^2

Function	Wire
Power supply (+Vs)	Brown
Square frequency signal A (CHA)	Green
Square frequency signal B (CHB)	Yellow
Ground (0V)	White
Start Top (CHN)	Pink
Connected to housing	Screen

Pulse diagram



Phase shift beetween CHA & CHB = 90°

Signal processing recommendation

The encoder is an incremental encoder providing a signal A, B and a start top.
These signals are generated by the encoder for each separate position 3600 times per revolution.
If your counting system monitors only one channel (Channel A, for example) disruption on the line or instability of position may cause generation of several high level signals on one channel only.
To ensure a correct count of the number of pulse and eliminate these spurious signals,it is important to take into account the two channels A and B to use the phase to eliminate spurious signals.
A large number of input card or tachometer provides this function by setting "AB 90 ° phase shift."

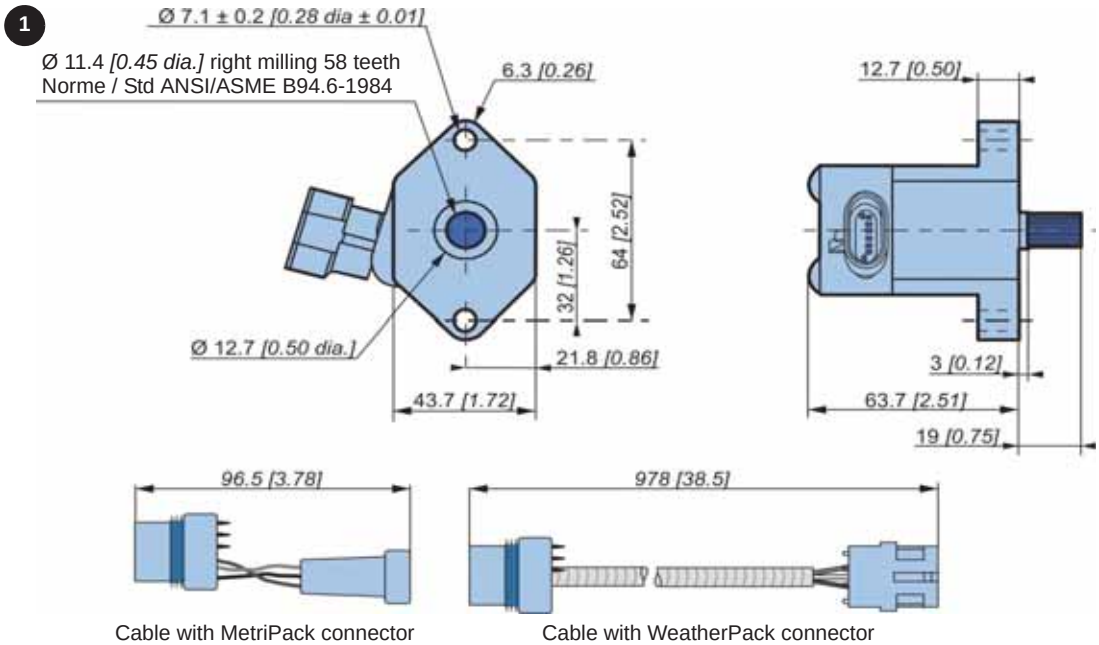
This feature also prevents any consideration of disturbance.
Such a disturbance could be seen as an encoder pulse if that channel is not correlated through channel B.

ROTARY POTENTIOMETER

Commercial name	ANGULAR-SENSOR-CABLE-MP-WP
Part number	A13534L
Function	Detects movement: Engine operations, lever positions, etc.
Compatibility	Electronic transmission management

Features	
Supply voltage	5 V
Output signal	10% to 87% of the supply voltage
Resistance	2.5 kΩ ± 10%
Type	Analog potentiometer
Travel	54°
Operating temperature	- 40 °C to + 85 °C *[-40 °F to 185 °F]*
Weight	230 g *[0.5 lb]*
Protection rating	IP 66

Layout



Cable with MetriPack connector

Cable with WeatherPack connector

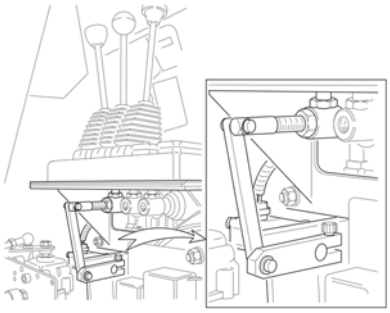
Installation

Mechanical fitting

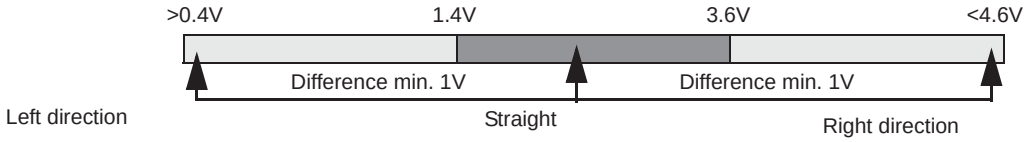
The steering sensor must be fitted onto a rigid plate at least 2 mm *[0.08"]* thick.
If this sensor is used with a SmartDrive™Off Road or Premier transmission system, it must be linked with a rod to the steering column or pivot. On four-wheel steering machines, a second steering sensor will be necessary.

Ref.		Quantity	Class	N.m *[lb.ft]* ± 10 % (as per standard DIN 912)
1	M 6	2	8.8	10 *[7.37]*

Example of mounting:



Sensor electrical signal control



Electrical wiring

2 cables provided with the potentiometer :

	Sensor wire ID	Function
1cable with Weather Pack connector	A	Ground
	B	Signal
	C	Supply
1 cable with Metri Pack connector	A	Supply
	B	Signal
	C	Ground

At rest, the tension signal is min.

For connector wiring, please refer to the cable table and to the general wiring diagram in the installation documentation for your transmission system.

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

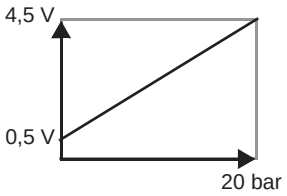
Electrical connection

Commercial name	KIT CONNECTEUR CAPT CDE SA	3-pin WeatherPack	page 71
Part number	007142212Z		
Commercial name	KIT CONNECTEUR CAPT VIRAGE	3-pin MetriPack	page 72
Part number	007142222K		
Commercial name	KIT-CONNECT-6-PIN-MP	6-pin MetriPack	page 73
Part number	A38140G		

20 BAR PRESSURE SENSOR

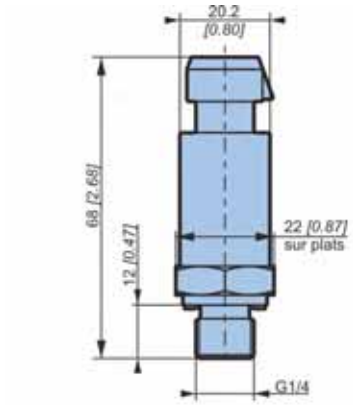
Commercial name	PRES-SENSOR-20B-OT1-G1/4
Part number	A21362U
Function	Measure the case pressure
Compatibility	Electronic transmission management

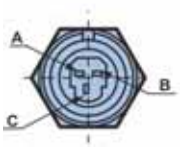
Features	
Power supply	5 V ± 0.5 V
Output signal	0.5V to 4.5V ratiometric
Pressure range	20 bars *[290 PSI]*
Over pressure safety	50 bars *[725 PSI]*
Pressure connection	G1/4"



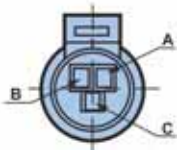
Response time	≤ 2 ms
Accuracy	≤ 1% FS
Using temperature range	Medium - 40 °C to 125 °C *[- 40 °F to 257 °F]*
	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Storage - 40 °C to 120 °C *[- 40 °F to 248 °F]*
Ingress protection	IP 67
CE conformity	EN 61326
Shock resistance	500 g according to DIN EN 837
Vibration resistance	20 g according to IEC 68-2

Layout G1/4 sensor





Sensor side view



Connector side view

A: Ground
B: 5 Vcc
C: Signal 0.5 to 4.5 V

Installation

For transmissions controlled by SmartDrive™ Easy Plus, Master and Premier System electronic control systems, the sensor is fitted on the case motor pressure circuit.

For other applications, please consult your Poclain Hydraulics applications engineer.

Hydraulic connection

Nut	O'ring	N.m *[lb.ft]* ± 10 %
G 1/4"	*FMP*	30 *[22]*

Observe the torques indicated.

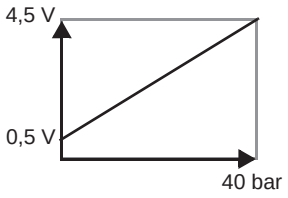
Electrical connection	Commercial name	Part number	
Cable for pressure sensor connection	CABLE-PRESSURE-SENSOR-3M	003141105U	page 93

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

40 BAR PRESSURE SENSOR

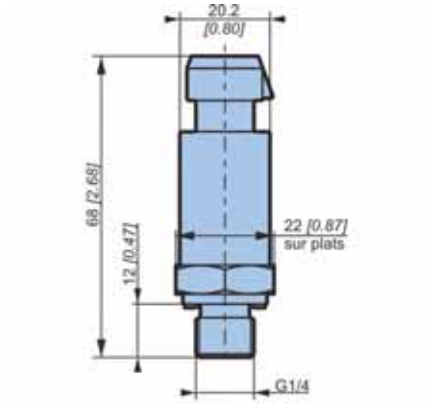
Commercial name	PRES-SENSOR-40B-MH2-G1/4
Part number	A36915A
Function	Measure the charge pressure
Compatibility	Electronic transmission management

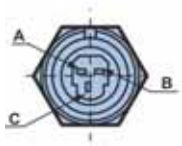
Features	
Power supply	5 V ± 0.5 V
Output signal	0.5V to 4.5V ratiometric
Pressure range	40 bar *[580 PSI]*
Over pressure safety	80 bar *[1 160 PSI]*
Pressure connection	G1/4"



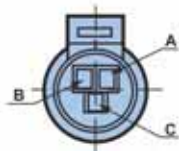
Response time	≤ 5 ms
Accuracy	≤ 1% FS
Using temperature range	Medium - 40 °C to 125 °C *[- 40 °F to 257 °F]*
	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Storage - 40 °C to 120 °C *[- 40 °F to 248 °F]*
Ingress protection	IP 67
CE conformity	EN 61326
Shock resistance	500 g according to DIN EN 837
Vibration resistance	20 g according to IEC 68-2

Layout G1/4 sensor





Sensor side view



Connector side view

A: Ground
B: 5 Vcc
C: Signal 0.5 to 4.5 V

Installation

For transmissions controlled by SmartDrive™ Easy Plus, Master and Premier System electronic control systems, the sensor is fitted on the charge pressure circuit.

For other applications, please consult your Poclain Hydraulics applications engineer.

Hydraulic connection

Nut	O'ring	N.m *[lb.ft]* ± 10 %
G 1/4"	*FMP*	30 *[22]*

Observe the torques indicated.

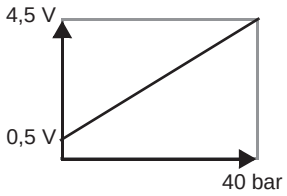
Electrical connection	Commercial name	Part number	
Cable for pressure sensor connection	CABLE-PRESSURE-SENSOR-3M	003141105U	page 93

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

40 BAR PRESSURE SENSOR IP6K9K

Commercial name	PRES-SENSOR-40B-G1/4-DIN
Part number	A53473X
Function	Measure the charge pressure
Compatibility	Electronic transmission management

Features	
Power supply	5 V ± 0.5 V
Output signal	0.5V to 4.5V ratiometric
Pressure range	40 bar *[580 PSI]*
Over pressure safety	80 bar *[1 160 PSI]*
Response time	≤ 5 ms
Accuracy	≤ 1% FS

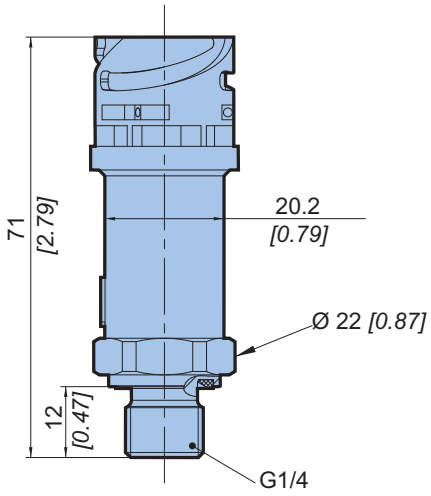


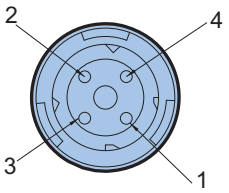
Using temperature range	Medium - 40 °C to 125 °C *[- 40 °F to 257 °F]*
	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Storage - 40 °C to 120 °C *[- 40 °F to 248 °F]*
Electrical connection	DIN72585 4 pins coding 1
Ingress protection	IP6K9K
Electrical protection	- Over-voltage :30V
	- Reverse polarity
	- Short circuit
CE conformity	EN 61326
Shock resistance	500 g (IEC 60068-2-27)
Vibration resistance	20 g (IEC 60068-2-6)

Mounting

To obtain a good temperature reading put the sensitive part of the sensor in the heart of the fluid stream.

Layout





1: +5VDC
2: Ground
3: Output signal 0.5V to 4.5V
4: Not used

Installation

For transmission controlled by SmartDrive™ controllers, this sensor may be fitted on a hydraulic component (pump, valve,...)

Hydraulic connection

Connection	Seal	N.m *[lb.ft]* ± 10 %
G 1/4"	FPM	30 *[22]*

Electrical connection

Commercial name	KIT-CONNECT-4PIN-DIN72585
Part number	B02394B

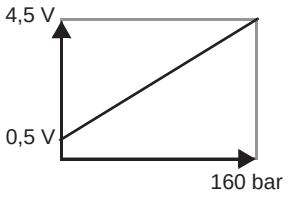
page 80

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

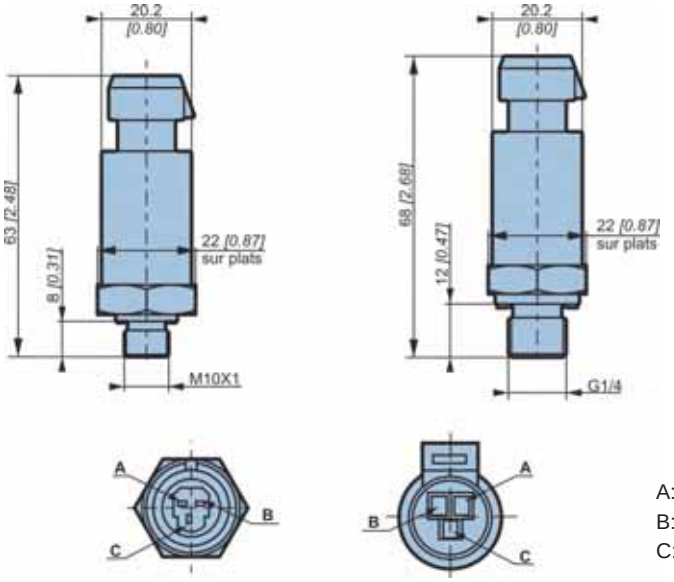
160 BAR PRESSURE SENSOR

Commercial name	PRES-SENSOR-160B-MH2-M10	PRES-SENSOR-160B-MH2-G1/4
Part number	003241167H	003241164E
Function	Measure the pressure on the brake system	
Compatibility	Electronic transmission management	

Features	
Power supply	5 V ± 0.5 V
Output signal	0.5V to 4.5V ratiometric
Pressure range	160 bars *[2320 PSI]*
Over pressure safety	320 bars *[4640 PSI]*
Pressure connection with VITON rectangulare section seal	M10 x 1 - G1/4"
Response time	≤ 5 ms
Accuracy	≤ 1% FS
Using temperature range	Medium - 40 °C to 125 °C *[- 40 °F to 257 °F]*
	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Storage - 40 °C to 120 °C *[- 40 °F to 248 °F]*
Ingress protection	IP 67
CE conformity	EN 61326
Shock resistance	500 g according to DIN EN 837
Vibration resistance	20 g according to IEC 68-2



Layout	M10 sensor	G1/4 sensor



Sensor side view

Connector side view

A: Ground
B: 5 Vcc
C: Signal 0.5 to 4.5 V

Installation

For transmissions controlled by SmartDrive™ Easy Plus, Master and Premier System electronic control systems, the sensor is fitted on brake valve VB 220. 2E0. 2F0 (See brochure No. A06604D).

For other applications, please consult your Poclain Hydraulics applications engineer.

Hydraulic connection

Nut	O'ring FPM	N.m *[lb.ft]* ± 10 %
M 10	-	20 *[14.75]*
G 1/4"	-	30 *[22]*

Observe the torques indicated.

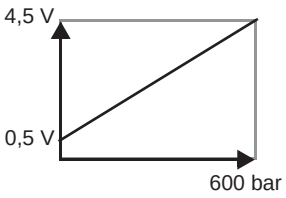
Electrical connection	Commercial name	Part number	
Cable for pressure sensor connection	CABLE-PRESSURE-SENSOR-3M	003141105U	page 93

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

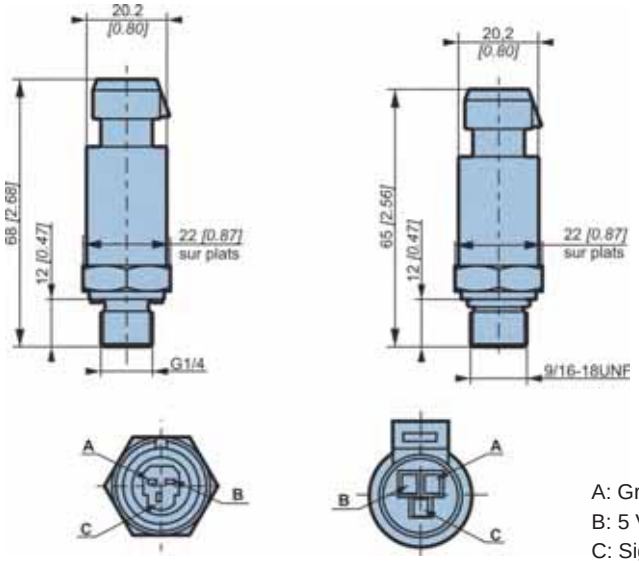
600 BAR PRESSURE SENSOR

Commercial name	PRES-SENSOR-600B-MH2-9/16	PRES-SENSOR-600B-MH2-G1/4
Part number	003241170L	003241171M
Function	Measure the pressure on the High Pressure system	
Compatibility	Electronic transmission management	

Features	
Power supply	5 V ± 0.5 V
Output signal	0.5V to 4.5V ratiometric
Pressure range	600 bars *[8702 PSI]*
Over pressure safety	1200 bars *[16800 PSI]*
Pressure connection with O'ring	9/16" - G 1/4"
Response time	≤ 5 ms
Accuracy	≤ 1% FS
Using temperature range	Medium - 40 °C to 125 °C *[- 40 °F to 257 °F]*
	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Storage - 40 °C to 120 °C *[- 40 °F to 248 °F]*
Ingress protection	IP 67
CE conformity	EN 61326
Shock resistance	500 g according to DIN EN 837
Vibration resistance	20 g according to IEC 68-2



Layout	Capteur G1/4	Capteur 9/16



A: Ground
B: 5 Vcc
C: Signal 0.5 to 4.5 V

Sensor side view Connector side view

Installation

For transmissions controlled by SmartDrive™ Easy Plus, Master and Premier System electronic control systems, this sensor may be fitted on a pump.

For other applications, please consult your Poclain hydraulics applications engineer.

Hydraulic connection

Connection	O'ring	N.m *[lb.ft]* ± 10 %
9/16" - 18 UNF 2A	Torique Ø11.98 x Ø1.98 *[0.47 dia. x 0.08 dia.]*	35 *[25.8]*
G 1/4"	*FPM*	30 *[22]*

Observe the torques indicated.

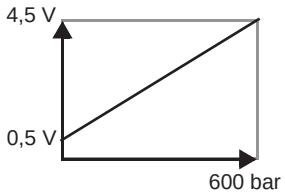
Electrical connection	Commercial name	Part number	
Cable for pressure sensor connection	CABLE-PRESSURE-SENSOR-3M	003141105U	page 93

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

600 BAR PRESSURE SENSOR IP6K9K

Commercial name	PRES-SENSOR-600B-G1/4-DIN
Part number	A53472W
Compatibility	Electronic transmission management
Function	Measure the pressure on the high pressure system

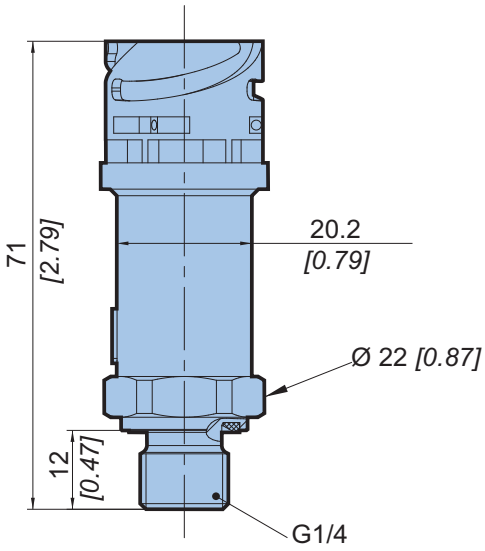
Features	
Power supply	5V ± 0.5V
Output signal	0.5V to 4.5V ratiometric
Pressure range	600 bar *[8702 PSI]*
Over pressure safety	1200 bar *[11603PSI]*
Pressure connection	G 1/4"
Response time	≤ 5 ms
Accuracy	≤ 1% FS
Using temperature range	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Medium - 40 °C to 125 °C *[- 40 °F to 257 °F]*
	Storage - 40 °C to 120 °C *[- 40 °F to 248 °F]*
Electrical connection	DIN72585 4 pins coding 1
Ingress protection	IP6K9K
Electrical protection	- Over-voltage: 30V
	- Reverse polarity
	- Short circuit
CE conformity	EN 61326
Shock resistance	500 g (IEC 60068-2-27)
Vibration resistance	20 g (IEC 60068-2-6)

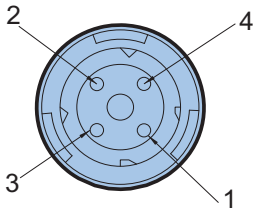


Mounting

To obtain a good temperature reading put the sensitive part of the sensor in the heart of the fluid stream.

Layout





1: +5VDC
2: Ground
3: Output signal 0.5V to 4.5V
4: Not used

Installation

For transmission controlled by SmartDrive™ controllers, this sensor may be fitted on a hydraulic component (pump, valve,...)

Hydraulic connection

Connection	Seal	N.m *[lb.ft]* ± 10 %
G 1/4"	FPM	30 *[22]*

Electrical connection

Commercial name	KIT-CONNECT-4PIN-DIN72585
Part number	B02394B

page 80

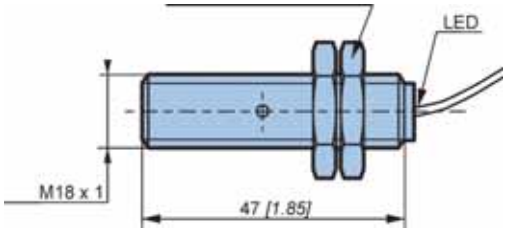
When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

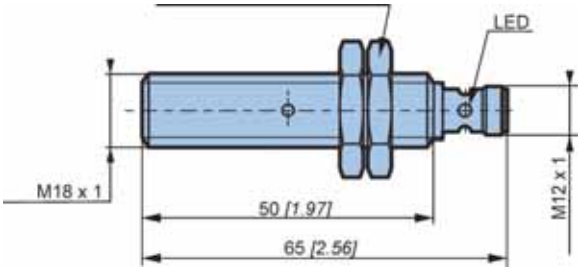
DIGITAL SENSORS

Commercial name	DETECTEUR TOR M18 CABLE	DETECTEUR TOR M18 CONNECT
Part number	003241160A	003241159Z
Function	Detects movement	
Compatibility	Electronic transmission management	

Features	
Supply voltage	10 to 30 V
Nominal range	8 mm *[0.31]*
Guaranteed detection distance	until6.48 mm *[0.25]*
Maximum switching frequency	500 Hz
Supply current	0 to 200 mA
Offload consumption	15 mA
Maximum charging current	200 mA
Max. voltage drop	3 V
Voltage drop (charge 20 mA)	< to 1.5 V
Operating temperature	-25°c to 70°c *[-13 °F to 158 °F]*
Housing material	Brass
Ingress protection	IP 67
Electrical protection	Against short-circuits Against polarity inversion

Layout	Sensor with cable	Sensor with connector
	L = 2m (3 wires x 0.34mm²)	
	Delivered with 2 nuts, 4 mm (not fitted)	Delivered with 2 nuts, 4 mm (not fitted)

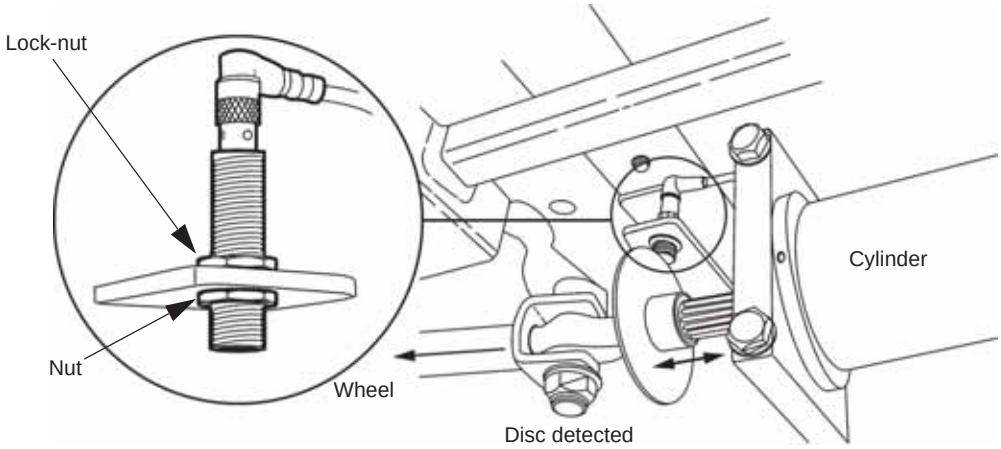




Installation of the digital steering sensor

The steering sensor must be secured (with the 2 screws supplied) on a rigid sheet at least 2 mm thick.

Example of mounting

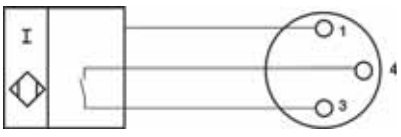


N.m *[lb.ft]* ± 10 %
30 *[22.1]*

The steering sensor must be secured (with the 2 screws supplied) on a rigid sheet at least 2 mm thick.

Example of mounting

Pin	Color	Description
1	Brown	Supply
4	Black	Signal
3	Blue	Ground



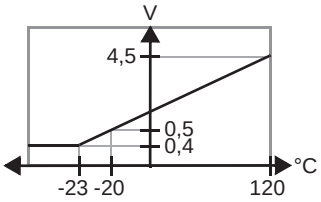
Electrical connection	90°	180°
Commercial name	ELEC-CABLE-M12-90°-5000	ELEC-CABLE-M12-180°-5000
Part No.	A04999J	A07468S
	page 94	page 94

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

ANALOG TEMPERATURE SENSORS

Commercial name	TEMP-SENSOR-ANALOG-G1/4-M12	TEMP-SENSOR-G1/4-M12-53
Part number	A22147X	A37774J
Compatibility	Electronic transmission management	
Fonction	Measure the temperature of the hydraulic circuit	

Features	
Power supply	5V ± 0.5 V
Output signal	0.5 V to 4.5 V radiometric Saturation at 0.4 V for temperatures < -23°C *[-9.4°F]*
Response time	5 s
Accuracy	±1.5% FS from -20°C *[-4°F]* to 0°C *[32°F]* ±1% FS from 0°C *[32°F]* to 120°C *[248°F]*
Permissible pressure	750 bar *[10 877 PSI]*
Using temperature range	-20 to +120°C *[-4 to +248°F]*
Housing material	Inox 304
Ingress protection	IP67
Electrical protection	- Over voltage: 30 V - Reverse polarity, - Short circuit.
Shock resistance	1m 3 axes
Vibration resistance	20 g



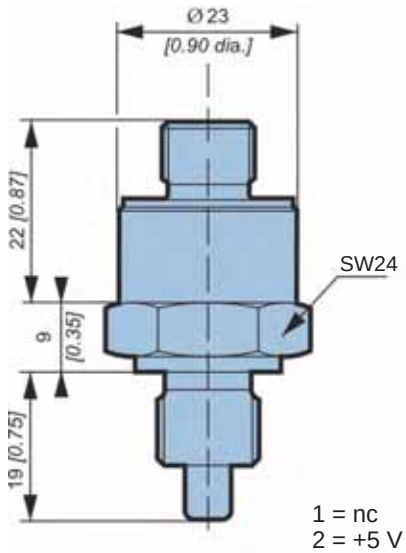
Mounting

To obtain a good temperature reading put the sensitive part of the sensor in the heart of the fluid stream.

Two lengths of sensor are available (19 mm *[0.75 in]* and 53 mm *[2.09 in]*) to achieve the best mounting for your application.

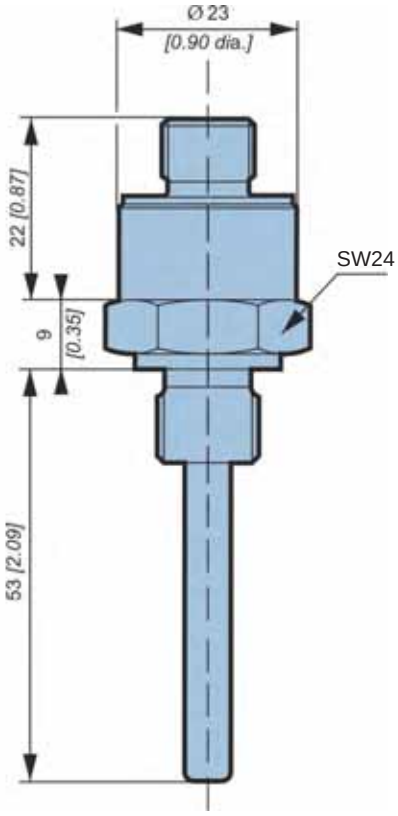
Layout

TEMP-SENSOR-ANALOG-G1/4-M12



1 = nc
2 = +5 V
3 = Output signal 0.5 to 4.5 V
4 = 0 V (Ground)

TEMP-SENSOR-G1/4-M12-53



Hydraulic connection

Connection	O'ring	N.m *[lb.ft]* ± 10 %
G 1/4"	Viton	22,5 *[16.6]*

Electrical connection	90°	180°
Commercial name	ELEC-CABLE-M12-90°-5000	ELEC-CABLE-M12-180°-5000
Part No.	A04999J	A07468S
	page 94	page 94

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

ANALOG TEMPERATURE SENSOR IP6K9K

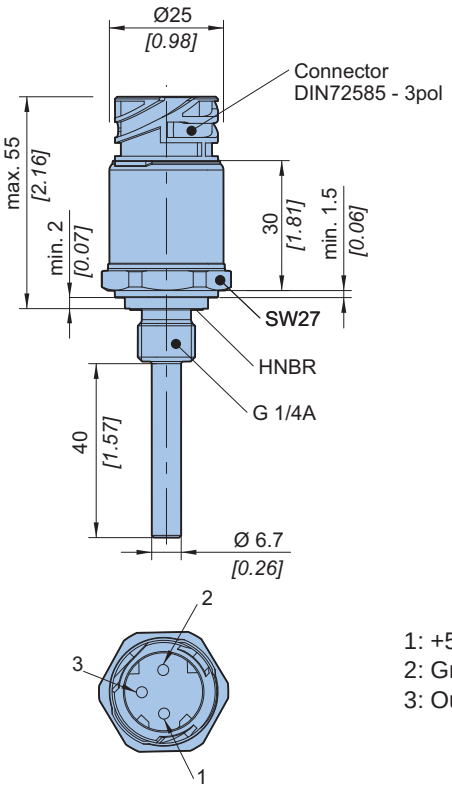
Commercial name	TEMP-SENSOR-G1/4-DIN-52
Part number	B00091X
Compatibility	Electronic transmission management

Features	
Power supply	5V ± 0.5V
Output signal	*0.5V to 4.5V ratiometric* Saturation at 0.4V for temperatures <-23°C *[-9.4F]*
Response time	4s for 50°C *[122°F]* step 8s for 90°C *[194°F]* step
Accuracy	≤ ± 1.5% FS
Permissible pressure	600 bar *[8702 PSI]*
Measuring range	-20 to +120°C *[-4 to +248°]*
Using temperature range	Ambient - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Fluid - 40 °C to 100 °C *[- 40 °F to 212 °F]*
	Storage - 40 °C to 100 °C *[- 40 °F to 212 °F]*
Housing material	Stainless 1.4571
Electrical connection	DIN72585 3 pins coding 1
Ingress protection	IP6K9K
Electrical protection	- Over-voltage
	- Reverse polarity
	- Short circuit

Mounting

To obtain a good temperature reading put the sensitive part of the sensor in the heart of the fluid stream.

Layout



1: +5VDC
2: Ground
3: Output signal 0.5V to 4.5V

Hydraulic connection

Connection	Seal	N.m *[lb.ft]* ± 10 %
G 1/4"	HNBR	20 *[14.8]*

Electrical connection

Commercial name	KIT-CONNECT-4PIN-DIN72585
Part number	B02394B
	page 80

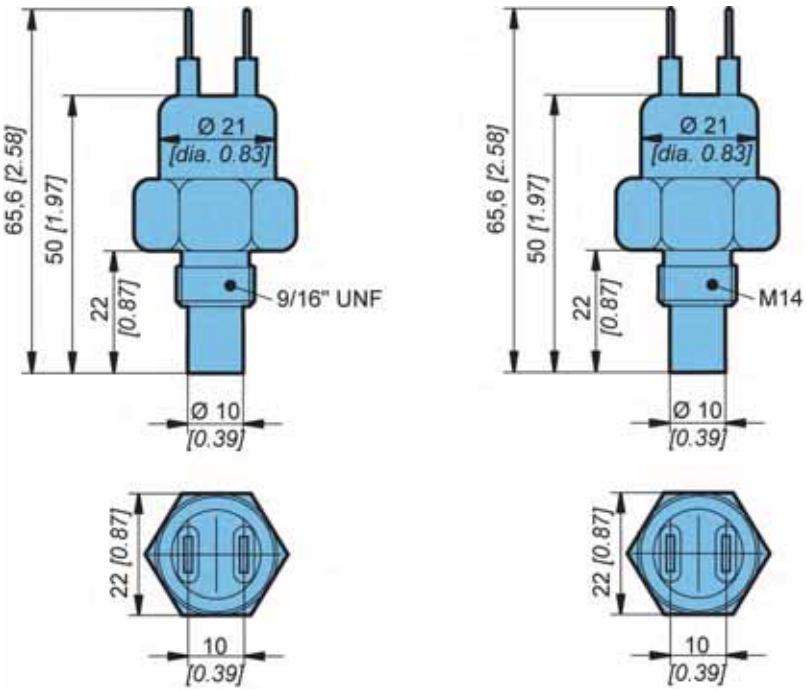
When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

TEMPERATURE SWITCH

Commercial name	TEMP-SENSOR-M14-95C-NC	TEMP-SENSOR-9/16-95C-NC
Part number	A22073S	A22572K
Compatibility	Electronic transmission management	
Fonction	Measure the temperature of the hydraulic circuit	

Features	
Threshold of temperature	95°C ± 3 *[203°F± 37.4]*
Hysteresis	< 20°C *[68°F]*
Type of contact	switch opens with increasing temperature
Max. voltage	30 Volt
Max. current	Ohmic load 16A and inductive load 10A
Using temperature range	-40 to +130°C *[-40 to +266°F]*
Max. pressure	100 bar *[1 450 PSI]*
Ingress protection	IP67
Housing material	CuZn38Pb2

Layout	9/16"UNF	M14



Hydraulic connection

Connection	O'ring	N.m *[lb.ft]* ± 10 %
M14 x 1,5	-	20 *[14.7]*
9/16'' UNF	-	

Electrical connection

Terminal blades 6,3 x 0,8 *[0.25 x 0.03]*

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

JOYSTICK WITH CENTER LOCK

Commercial name	JOYSTICK-35°-HANDLE-LOCK
Part number	003442799X
Compatibility	Electronic transmission management
Function	Joystick with medium lock. Provide the translation speed setting.

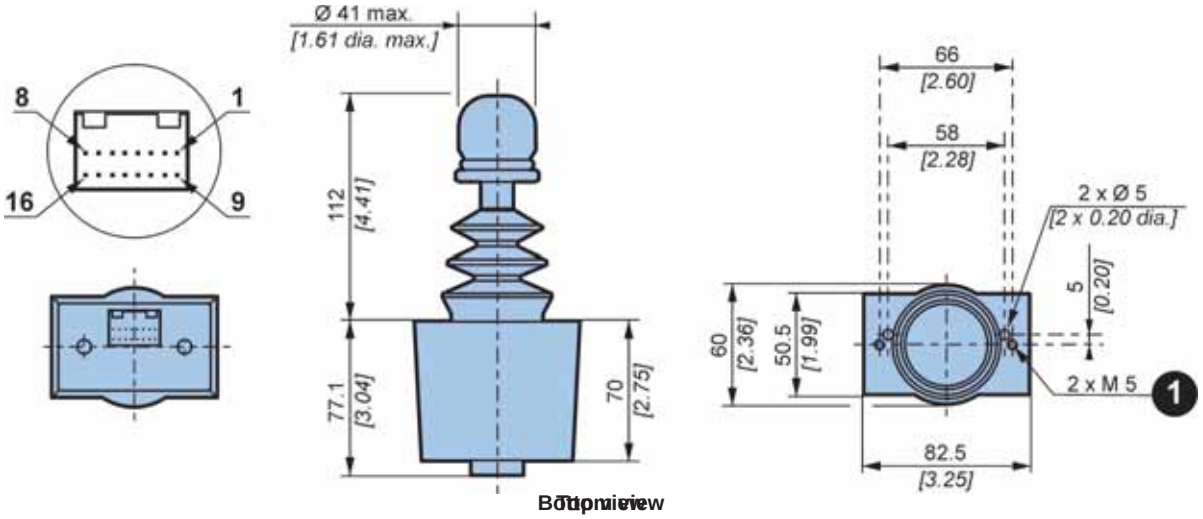
Joystick is provided with16 pin AMP Multilock connector (see the picture above).

Joystick features	
Supply voltage	5 V
Output signal	10% to 90% of supply voltage
Resistance	2k Ohm Tolerance ±20%
Expected service life	500 000 cycles
Electrical stroke	± 32°
Mechanical stroke	± 35°
Maximum applied force	300 N full deflection, 130 mm from flange
Operating force	17.8 N full deflection, 55 mm from flange
Breakout force	6.2 N, 55 mm from flange
Directional switches communication angle	5° ± 1° either side of center
Direction switches max. load current	200 mA resistive
Operating temperature range	- 25 °C to + 70 °C *[- 13 °F to 158 °F]*
Mass	560 g *[1.23 lb]* with HKN handle fitted
Ingress protection	IP 65

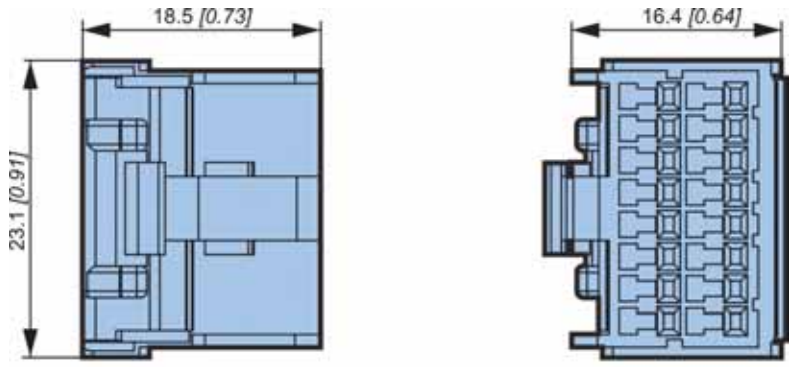
Connector features		
Manufacturer		AMP
Components	Connector	174046-2
	16 pins	175062-1
Wire range	0.3 to 0.56 mm^2	
Wire insulation diameter	1.8 to 2 mm	

Mounting tools	Reference AMP
Chuck-jaw + crimpers	58522-1

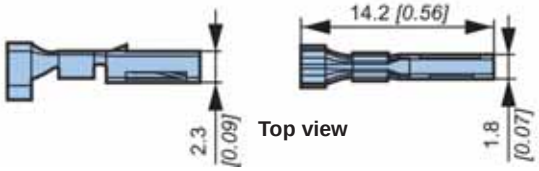
Layout



Connector



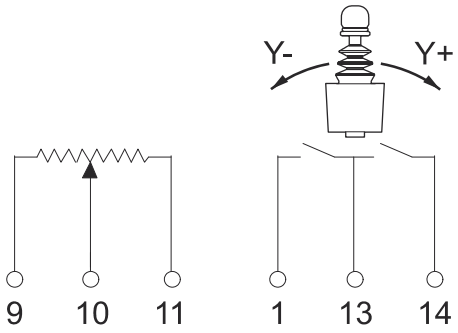
Pin



Installation

Electrical wiring

Terminal	Description
1	Directional switches Y-
9	Ground
10	Output voltage signal
11	Supply
13	Common directional switches
14	Directional switches Y+



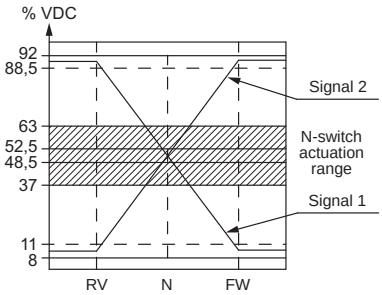
When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

JOYSTICK WITH Z GATE

Commercial name	JOYSTICK-30°-Z-GATE-M10
Part number	A37706K
Compatibility	Electronic transmission management
Function	Joystick with Z gate provide the ground drive speed command.
Type	Hall Effect Joystick with two opposite analog signals and a neutral switch.

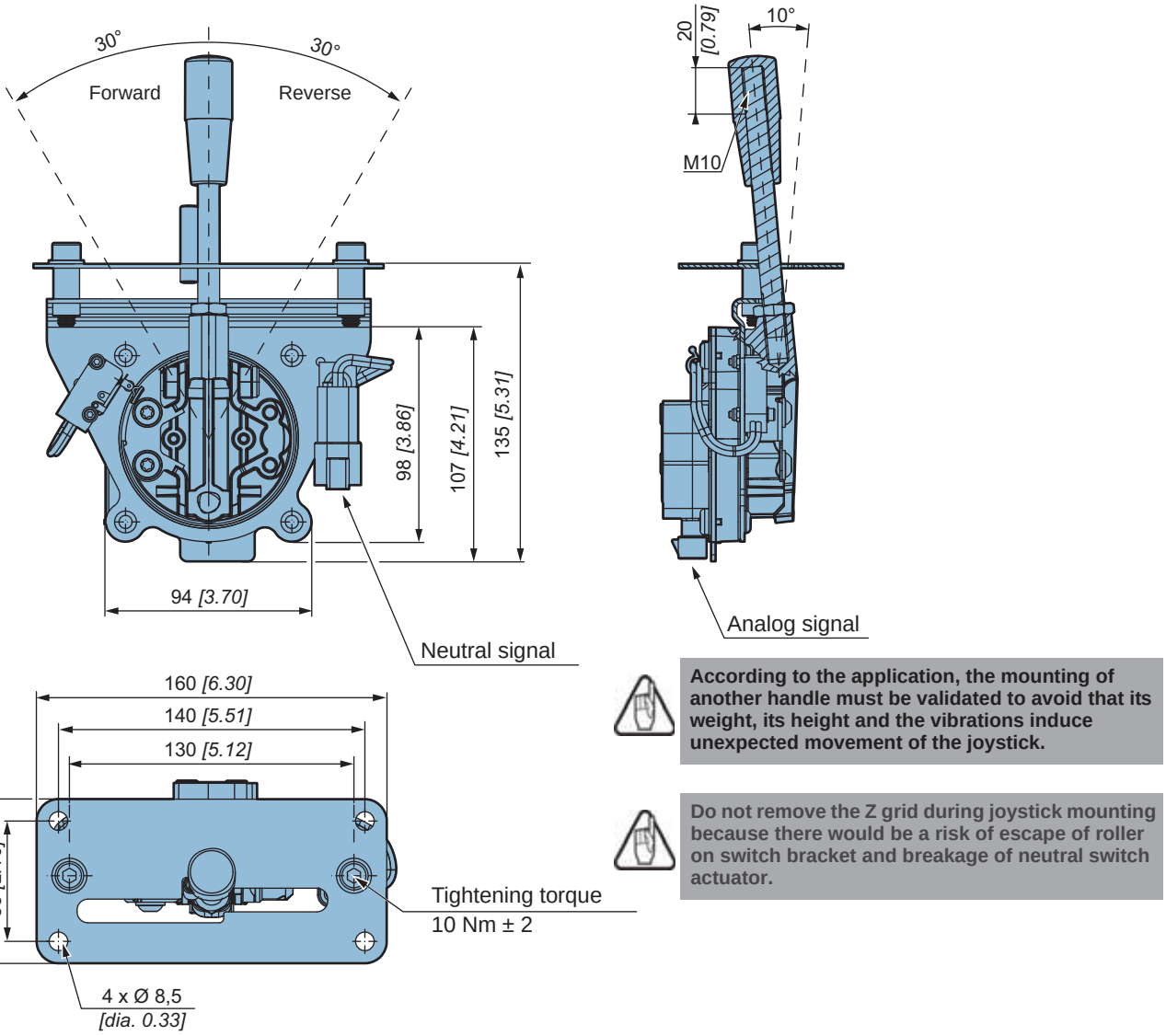
Features

Supply voltage of analog sensor (VDC)	5 V ± 0,5 V
Electrical protection of analog sensor	Over voltage: 14.4 V Reverse polarity Short circuit (10 minutes)
Output signal of analog sensor	8% to 92% of VDC
Max. hysteresis of analog signal	±1% of VDC
Max. load current of analog sensor	10 mA per channel
Mini. load resistance of analog sensor	30 kΩ
Contact type of the neutral switch	NO and NC
Neutral switch operating threshold in forward	52,5% < S2 < 63% of VDC 37% < S1 < 48,5% of VDC
Neutral switch operating threshold in reverse	37% < S2 < 48,5% of VDC 52,5% < S1 < 63% of VDC
Mini. load current of neutral switch	5 mA under 6 V; 2 mA under 12 V; 1 mA under 24 V
Max. load current of neutral switch	3 A



Operating angle	± 30°
Operating force	From 1,2 to 2,3 Nm
Operating temperature range	-40 °C to +80 °C *[-40°F to +176 °F]*
Degrees of protection	IP 67
Life time	500,000 cycles
Mass	1 kg *[2.20 lb]*

Layout

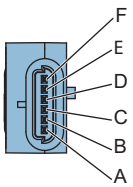


According to the application, the mounting of another handle must be validated to avoid that its weight, its height and the vibrations induce unexpected movement of the joystick.

Do not remove the Z grid during joystick mounting because there would be a risk of escape of roller on switch bracket and breakage of neutral switch actuator.

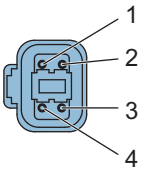
Electrical wiring

Analog signal



A	Signal 1
B	Ground signal 1
C	+5 V signal 1
D	+5 V signal 2
E	Signal 2
F	Ground signal 2

Neutral signal



1	Common
2	Opened contact in neutral position
3	Closed contact in neutral position
4	Not used

For SmartDrive™ controllers use the analog signal 2 and opened contact in neutral position.

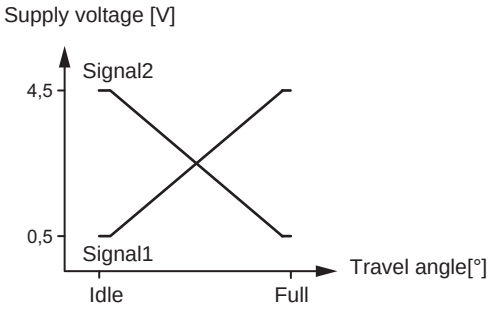
Mating connector kit

Commercial name	Part Number	
KIT-CONNECT-4-PIN-DEUTSCH	A39961L	page 78
KIT-CONNECT-6-PIN-MP	A38140G	page 73

ELECTRONIC TRAVEL PEDAL

Commercial name	ELEC-HORIZ-PEDAL-30°-DUAL
Part number	A50838J
Function	Pedal with dual output signal. Contactless sensor. Travel and brake control.
Compatibility	Electronic transmission management.

Features	
Supply voltage	5 V ± 0,5 V
Output signal	signal 1: 10% to 90% of the supply voltage signal 2: 90% to 10% of the supply voltage 5 V supply voltage example:



Electronic protections	• against short circuits • overvoltage to 24 V • polarity inversion to -15 V
Operating temperature	- 40 °C to + 85 °C *[- 40 °F to 185 °F]*
Weight	0,96 kg *[2.11 lb]*
Ingress protection	IP66

Electrical connection

Pedal is delivered with a connection kit:

Counter connector kit includes:	• Connector	AMP ref. 1-967616-1 (x1)
	• Terminals	AMP ref. 0-962885-5 (x7)
	• Wire seal	AMP ref. 0-0967067-1 (x7)
	• Cavity plug	AMP ref. 967056-1 (x4)

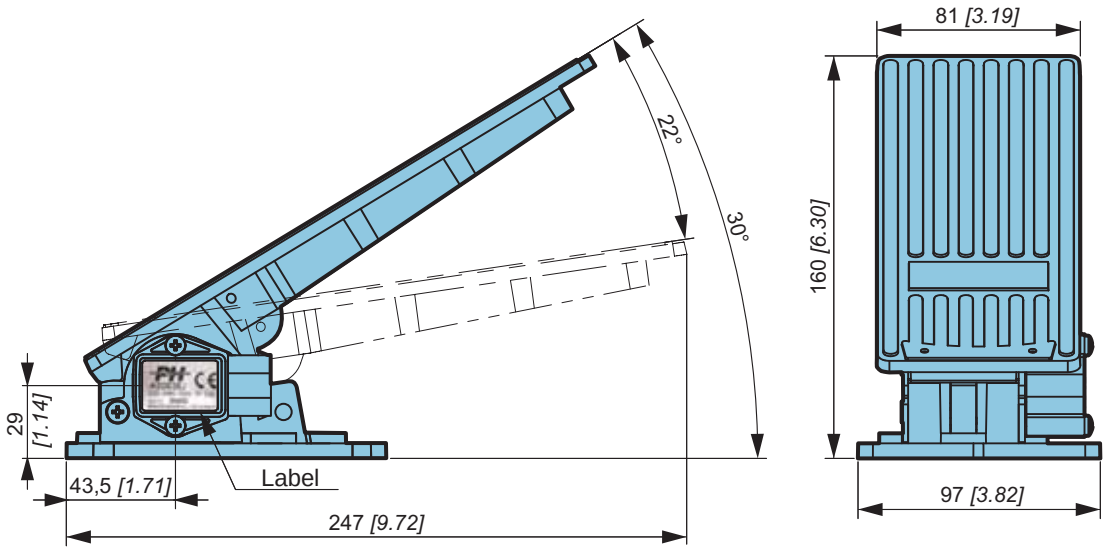
To crimp correctly use:

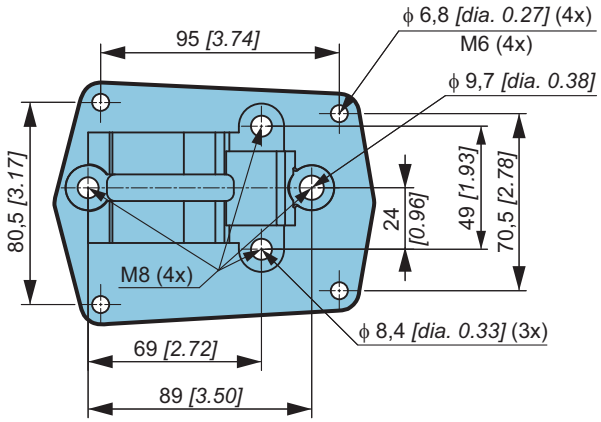
- Special crimping tool Tyco: 0-0539 635-1
- Wire gauge: AWG20
- External diameter of the wire: between1,29 mm and 1,6 mm

It is possible to connect a harness to use only 1 signal with connector Weather Pack: A51444S (for more details, see page 97).

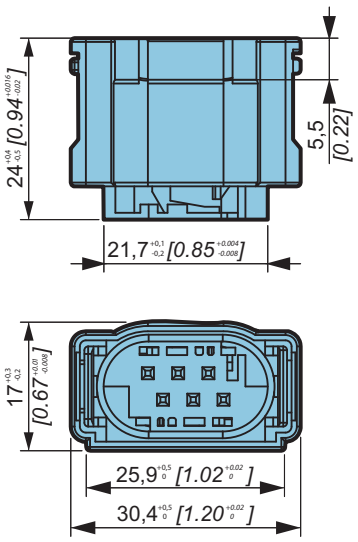
It is possible to connect a harness to use 2 signals with connector Deutsch: A51445T (for more details, see page 98).

Layout





Tyco connector



Installation

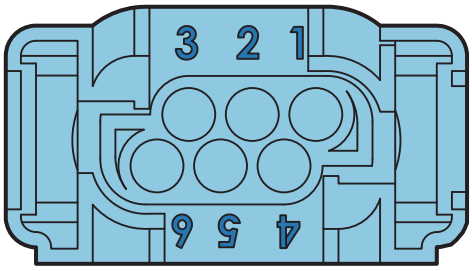
Fixing on support:

Sheet thickness must be a minimum of 4 mm *[0.16 inch]*.

The pedal may be fixed on its support in two ways; with either 4x M6 screws, or by 4 x M8 screws (not supplied).

Ref.		Quantity	Class	N.m *[lb.ft]* ± 10 %(as per standard DIN 912)
1	M8	4	8.8	25 *[18.44]*
2	M6	4	8.8	10 *[7.37]*

Electrical wiring



Assignment	Function
1	5V (signal 1)
2	0V (signal 1)
3	signal 2
4	signal 1
5	0V (signal 2)
6	5V (signal 2)

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

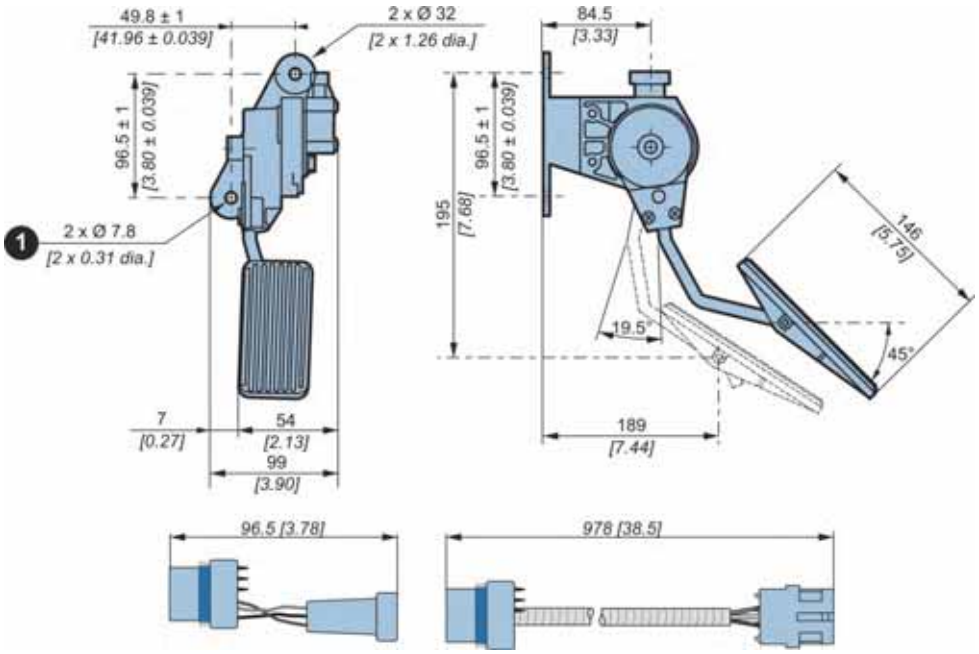
TRAVEL / BRAKE SUSPENDED PEDAL

Commercial name	ELECTRIC-VERTICAL-PEDAL
Part number	A13540S
Function	Pedal with potentiometer. Travel and brake control.
Compatibility	Electronic transmission management

Features	
Supply voltage	5 V
Output signal	10% to 87% of the supply voltage
Resistance	2.5 kΩ ± 10%
Operating temperature	- 40 °C to + 85 °C *[- 40 °F to 185 °F]*
Weight	1.05 kg *[2.32 lb]*
Ingress protection	IP66

Electrical connection			
Commercial name	KIT CONNECTEUR CAPT CDE SA	WeatherPack	page 71
Part number	007142212Z		
Commercial name	KIT CONNECTEUR CAPT VIRAGE	MetriPack	page 72
Part number	007142222K		

Layout



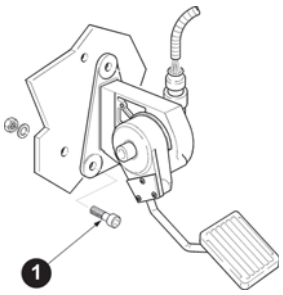
Cable with MetriPack connector — Cable with WeatherPack connector

Installation

Fixing on support :

To fix the pedals, provide a plate at least 4 mm *[0.16"]* thick.

Ref.		Quantity	Class	N.m *[lb.ft]* ± 10 %(as per standard DIN 912)
1	M 6	2	8.8	10 *[7.37]*



Electrical wiring

2 cables provided with the pedal :

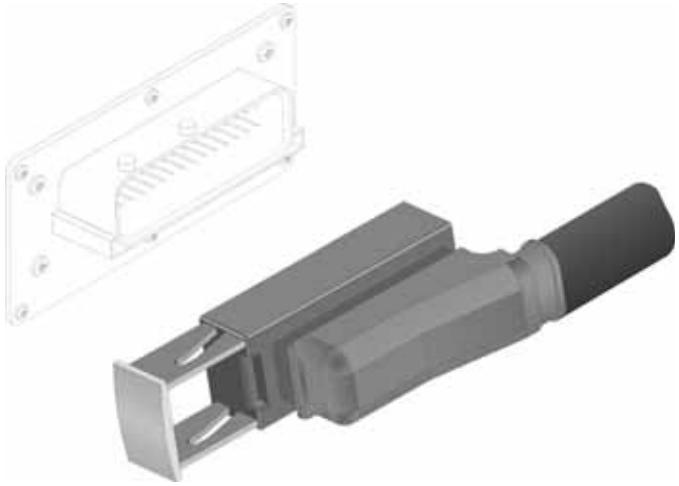
	Sensor wire ID	Function
1cable with Weather Pack connector	A	Ground
	B	Signal
	C	Supply
1 cable with Metri Pack connector	A	Supply
	B	Signal
	C	Ground

At rest, the signal tension is min.

For connector wiring, please refer to the cable table and to the general wiring diagram in the installation documentation for your transmission system.

When wiring, check that the wire can neither be cut off, nor torn off when the machine is working or moving.

SMARTDRIVE™ EASY MAIN CONNECTOR

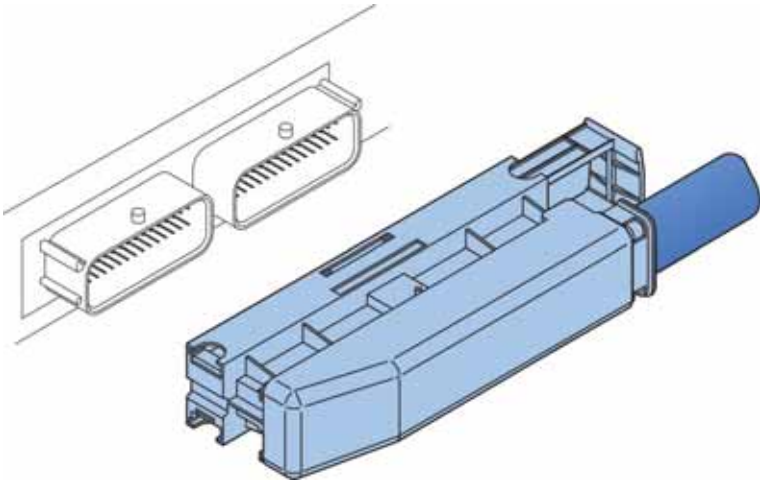


Commercial name	KIT-CONNECTEUR-MAIN-SD-EASY
Part number	A02809D

Features			
Manufacturer			AMP
Componants		Connector:	1-967281-1
		Protective cover:	0-965643-1
	Power	7 female contacts:	929937-3
		7 insulants:	828905-1
		6 stoppers:	828922-1
	Signals	40 female contacts:	962876-1
		40 insulants:	963530-1
		36 stoppers:	963531-1
Cable section	For power pins	1.5 to 2.5 mm² *[0.0023 to 0.004 in²]*	
	For signal pins	0.5 to 1.0 mm² *[0.0008 to 0.0015 in²]*	
Insulation diameter	For power pins	2.2 to 3.0 mm² *[0.0034 to 0.0046 in²]*	
	For signal pins	1.4 to 1.9 mm² *[0.0021 to 0.003 in²]*	
Operating temperature	-40°C to 85°C *[-40°F to 185°F]*		
Ingress protection	IP 68		

Mounting tools for the connector	AMP reference
Crimpers	539635-1
Chuck-jaw for power spindles	539737-2
Chuck-jaw for control spindles	539651-2
Extractor for power spindles	1-1579007-6
Extractor for control spindles	726534-1

SMARTDRIVE PREMIER, MASTER, OFFROAD MAIN CONNECTOR



Commercial name	MAIN SD CONNECTOR KIT
Part number	007142203P

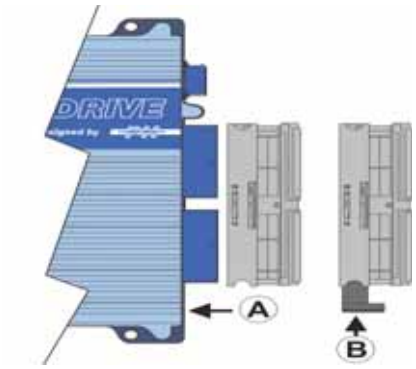
Features		
Manufacturer		FCI
Componants	Connectors:	PPI0001258
	Locking cam:	211A567007
	Protective cover:	211A560008
	60 Pins:	211CC2S1120
	60 Stoppers: (when a pin is not used)	F180100
Cable section	0.35 to 0.75 mm² *[0.0005 to 0.0011 in²]*	
Insulation diameter	1.4 to 2.7 mm *[0.05 to 0.11 in]*	
Operating temperature	-40°C to +125°C *[-40°F to 257°F]*	
Ingress protection	IP 68	

Fitting the main connector

Locking device position

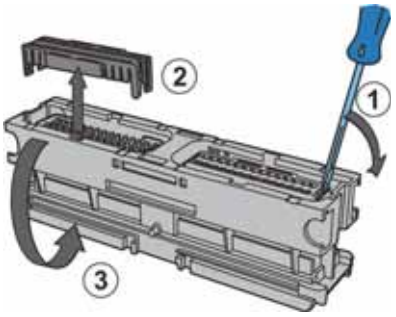
A. Place the black unit on the ECU.
Note its position and separate its from the ECU.

B. Insert the purple locking device into the unit from the botton to the top and push until it clicks.
The cable will have to be positioned on the locking device side.

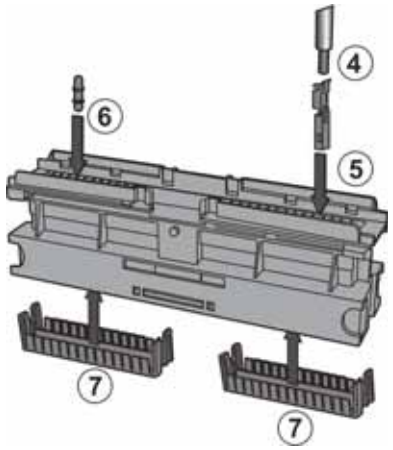


Fitting the connector

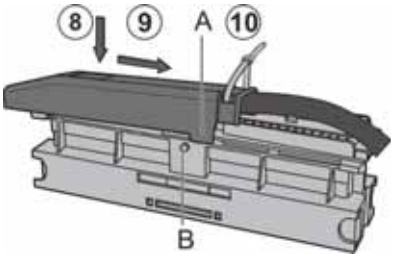
1. Unclip the 2 yellow supports.
2. Remove these supports.
3. Turn the unit over.



4. Strip the wire over 4 mm.
Crimp each conductor on its lug using pliers FCI211S005.
5. Insert each lug into the connector as shown in the electrical circuit diagram in the appendix.
In case of error, use extraction tool 210S048 to remove the lug.
6. Insert the green plugs into the free ports of the connector.
7. Clip on the 2 yellow supports.

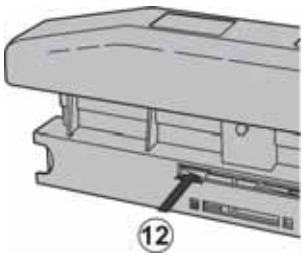


8. Position the cover and lower it.
The cover tab (A) must be on the right of the unit tab (B).
9. Lock it by pulling on it until there is a click.
10. Secure the cable uising a cable grip.



Removing the locking device

12. To remove the purple locking device, press as shown.
13. Partially pull out the locking device, press as shown.
14. Repeat point 12 on the other side, and completely remove the locking device.



SMARTDRIVE™COMMUNICATION CONNECTOR

Commercial name	COM SD LT CONNECTOR KIT
Part number	A49773B
Compatibility	SmartDrive Easy Plus, SmartDrive Auto, SmartDrive Premier, SmartDrive Master, SmartDrive Offroad

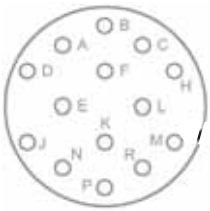
Features		
Manufacturer		AMPHENOL
Componants	Bayonet connector 14 pins	PT06A12-14SPG023F620
Cable diameter	3.5 - 8 mm *[0.14 - 0.31 in]*	
Wire section	0,38 mm^2 to 0,93 mm^2 *[to0.0005 in^2 to 0.001 in^2]*	
Operating temperature	-55°C to 125°C *[-67°F to 257°F]*	
Material	Aluminium	

Connector mounting

1. Unscrew the connector sub-assemblies.
   Passthe cable through the securing elements.
2. Strip the wires to a length of 5 mm *[0.19 in]*.
   Solder the wires onto the pins as shown in the next table.
3. Remount the connector by screwing the securing elements to one another.

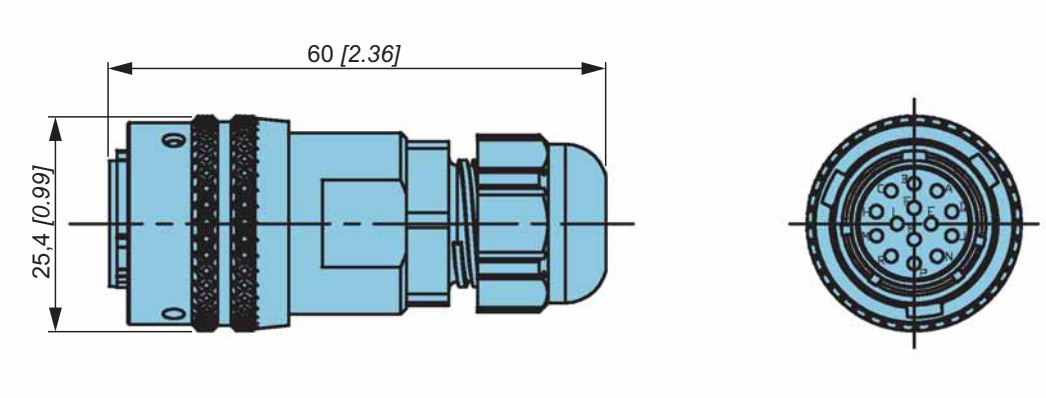
Connector wires designation

E: CANL
F: CANL
K: CANH_120
M: CANH
N: CANH
P: GND
R: GND



A 120 ohm bus termination resistor can be activated in linking up K and E, or K and F.

Layout



SMARTDRIVE™ MALE COMMUNICATION CONNECTOR

Commercial name	KIT CONNECTEUR MALE COM SD
Part number	A50515H
Compatibility	SmartDrive™ Easy Plus, SmartDrive™ Auto

Features		
Manufacturer		Amphénol
Components	Receptacle	PT02A12-14P023
	Closing cap	BECN1207
	Seal	JE12
Wire range	0,38 to 0,93 mm^2	
Insulation diameter	1,2 to 2,4 mm	
Operating temperature	-55°C to +125°C *[-67°F to 257°F]*	
Ingress Protection	IP68	
Material	Aluminium wit h plated nickel	

Connector mounting

Strip the wires to a length of 5 mm *[0.19 in]*.
Solder the wires onto the pins as shown in the table below.

N° pin SD Easy Plus connector	Function	N° pin male communication connector
7	5V RS 232	A
12	CAN L	E, F
26	RX RS 232*	H
14	CAN H 120	K
27	TX RS 232*	L
13	CAN H	M, N
42	Ground	P, R

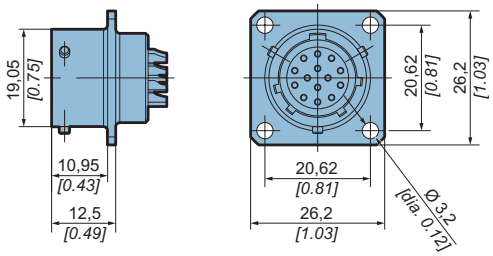
Risk of damage to the serial port of the ECU.

When connecting an external equipment working with the RS232 link, be sure to connect as following:

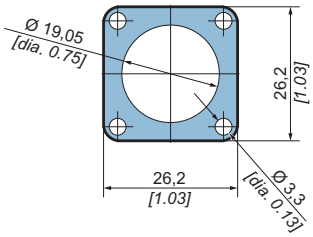
- **RX RS 232 (Easy) → TX RS232 (Various equipment)**
- **TX RS 232 (Easy) → RX RS232 (Various equipment)**

Layout

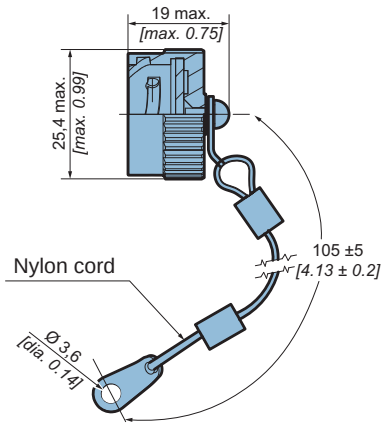
Receptacle



Seal



Closing cap



SMARTDRIVE™ CT MAIN CONNECTOR

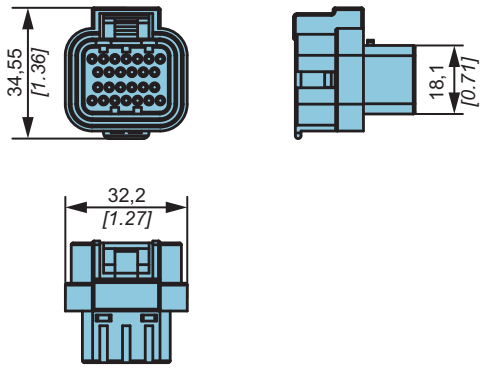
Characteristics			SD-CT-200	SD-T-300
Commercial name			KIT-CONNECT-SD-CT-200	KIT-CONNECT-SD-CT-300
Poclain Hydraulics part number			A48149L	A48140B
Function	SmartDrive™ CT controller's Counter-part connectors			
Compatibility	Electronic transmission management with SmartDrive™ CT controller			
Component		**AMP reference**		
Connector A		1473416-1	x1	x1
Connector B		4-1437290-1	x1	x1
Connector C		3-1437290-7	0	x1
Sockets		3-1447221-3	x65	x90
Stoppers		4-1437284-3	x50	x75
Wire section			0,75 to 1,25 mm² *[0.00116 to 0.00194 in²]*	
Insulation diameter			for wire section 0,75 to 1,25 mm² *[0.00116 to 0.00194 in²]* : 1,6 to 2,4 mm *[0.063 to 0.094 in]*	
Operating temperature			-40°C to 85°C *[-40°F to 185°F]*	
Ingress Protection			IP67	

Mounting tools for the connector

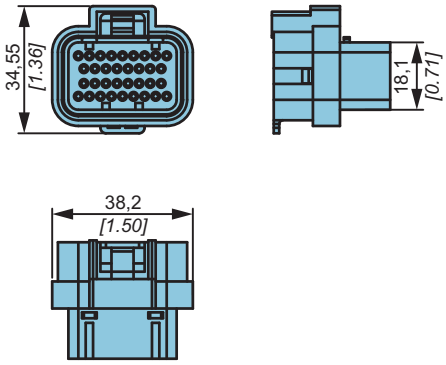
Description		AMP reference
Crimpers		1454509-1

Overall dimensions

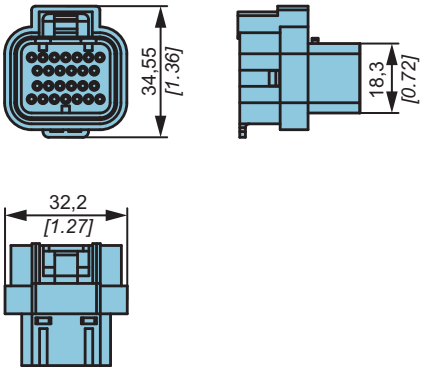
Connector A: 1473416-1



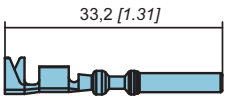
Connector B: 4-1437290-1



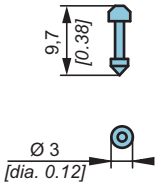
Connector C: 3-1437290-7



Socket:3-1447221-3



Stopper: 4-1437284-3



SMARTDRIVE™ CT COMMUNICATION CONNECTOR

This connector has to be present on the machine to permit SmartDrive™ CT maintenance.

Commercial name	KIT-CONNECT-COM-M-SD-CT
Part number Poclain Hydraulics	A48693C
Function	Diagnosis and download the software embedded in the SmartDrive ™ CT controller via CAN bus
Compatibility	Electronic transmission management with SmartDrive™ CT controller
Manufacturer	DEUTSCH

Features			Référence
Components		1x Receptacle	HD10-9-1939PE
		1 x Closing cap	HDC9-JDL082397
		1 x Gasket	HD10-9-GKT
		7 x pins	0460-202-1631 (AWG16-20)
		4 x Stoppers	114-017
Operating temperature	For the connector: -55°C to 125°C *[-67°F to 257°F]*		
	For the gasket: -57°C to 107°C *[-70.6°F to 224.6°F]*		
Ingress Protection	IP67		
Wire section	0,5 to 1.0 mm^2 *[0.019* to *0.039 in²]* (16, 18, 20 AWG)		
Insulation diameter	1,35 to 3,05 mm *[0.053* to *0.12 in]*		

Mounting tools for the connector

Description		AMP reference
Crimpers		HDT-48-00
Extractor		0411-310-1605

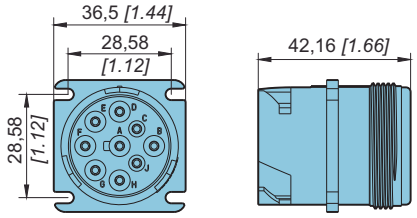
Connector mounting

Strip the wires to a length of 5 mm *[0.19 in]*.
Crimp the wires onto the pins as shown in the table below.

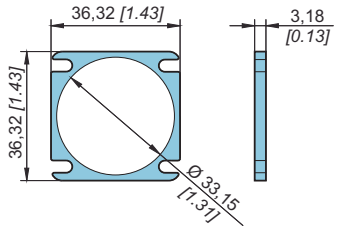
N° pin connector on SmartDrive™ CT controller		Function	N° pin male communication connector
		Ground	A
		VBAT_P	B
CAN 2 vehicle	Connector B pin 10	CAN2 H	C
	Connector B pin 18	CAN2 L	D
-	-	-	E
-	-	-	F
-	-	-	G
CAN 1 diagnosis	Connector B pin 1	CAN 1 H	H
	Connector B pin 2	CAN 1 L	J

Overall dimensions

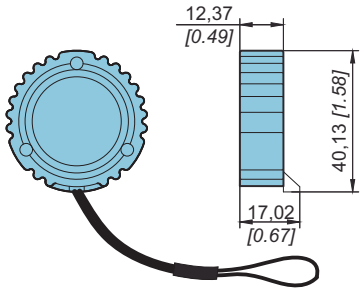
Receptacle: HD10-9-1939PE



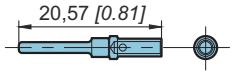
Gasket: HD10-9-GKT



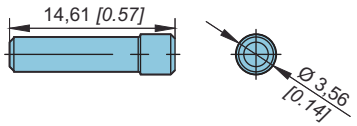
Cap: HDC9-JDL082397



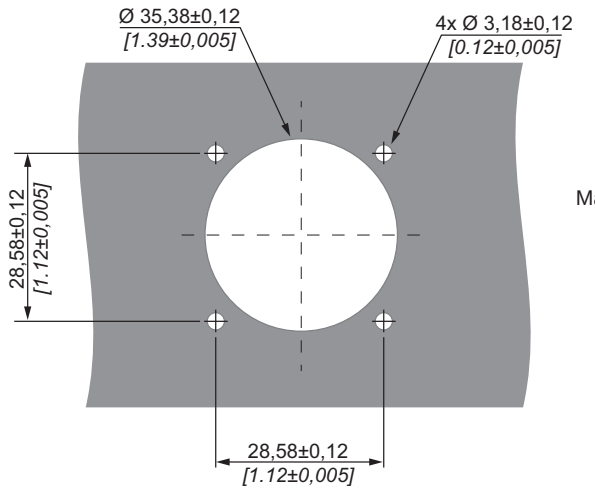
Pin: 0460-202-1631



Stopper: 114017



Panel cutout



Maximum panel thickness: 6,35 mm *[0.25 in]*

CONNECTOR KIT 120ΩKIT

Commercial name	KIT-PLUG-120-DTM-2S
Part number	A52539H
Function	120Ω termination resistor for CAN bus
Compatibility	Electronic transmission management with SmartDrive™ CT controller and Display 4.3C.

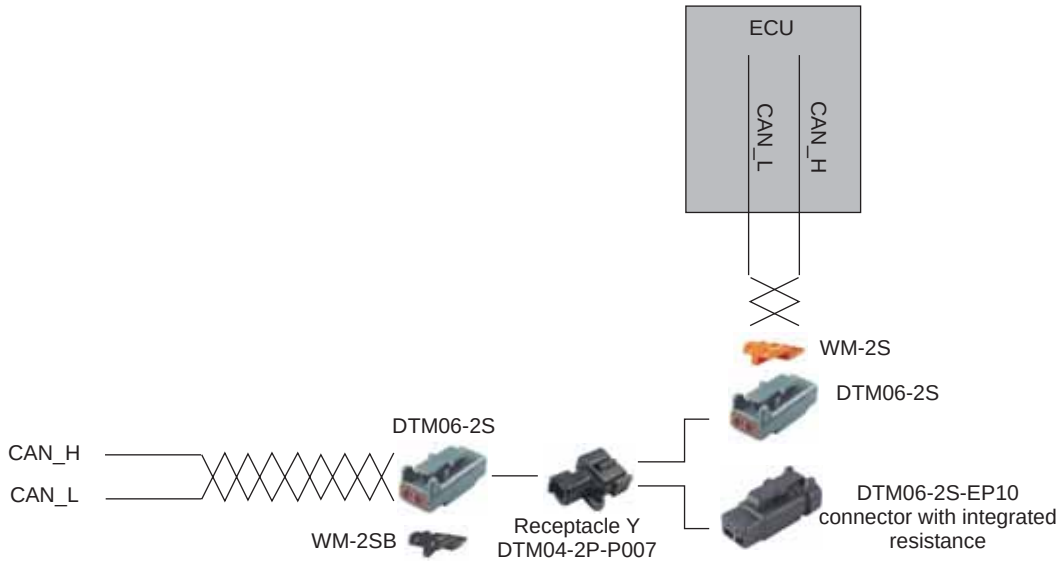
Features			Référence
Components		1 x receptacle	DTM04-2P-P007
		2 x connectors	DMT06-2S
		1 x wedgelock	WM-2S
		1 x wedgelock	WM-2SB
		1 x connector with integrated resistance	DMT06-2S-EP10
		7 x sockets	0462-201-2031
Operating temperature	-55°C to 125°C *[-67°F to 257°F]*		
Wire section	0,2 to 0,5 mm^2 *[0.008* to *0.019 in²]*		
Insulation diameter	1,35 to 3,05 mm *[0.053* to *0.12 in]*		
Pin material	Gold plated		
Contact size	20		

Mounting tools for the connector

Description		AMP reference
Crimpers		HDT-48-00

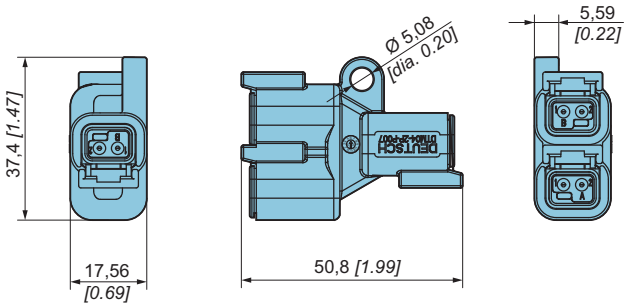
Connector mounting

Strip the wires to a length of 5 mm *[0.19 in]*.
Crimp the wires onto the sockets as shown in the diagram below.

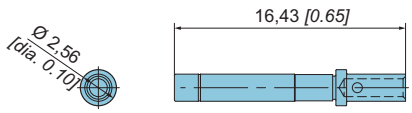


Dimensions

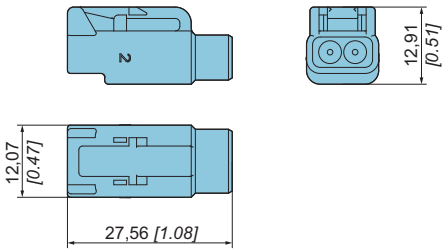
Receptacle Y: DTM04-2P-P007



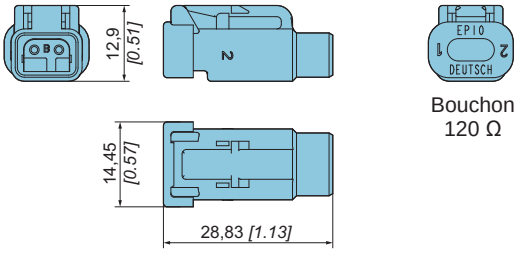
Socket: 0462-201-2031



Connector: DTM06-2S

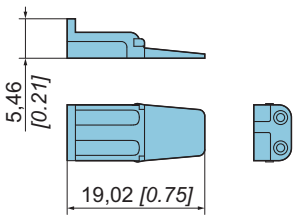


Connector with integrated resistance: DTM06-2S-EP10

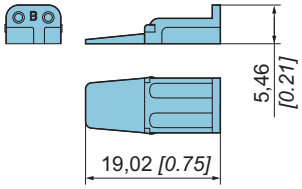


Bouchon
120 Ω

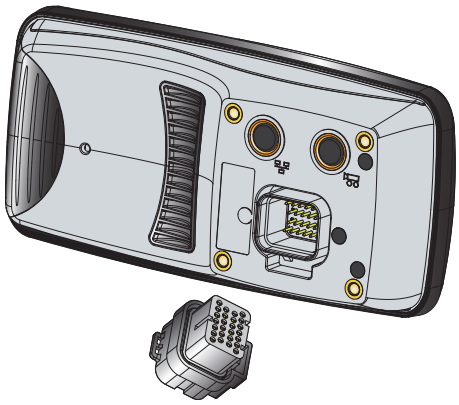
Orange wedgelock: WM-2S



Black wedgelock: WM-2SB



DISPLAY 4.3C MAIN CONNECTOR



Characteristics	Display 4.3C
Commercial name	KIT-CONNECT-DISPLAY-4.3C
Poclain Hydraulics part number	A49050Q
Function	Display 4.3C´s Counter-part connectors
Compatibility	Electronic transmission management with SmartDrive controllers.

Component		AMP reference	
Connector		3-1437290-7	x1
Sockets		3-1447221-3	x8
Stoppers		4-1437284-3	x22

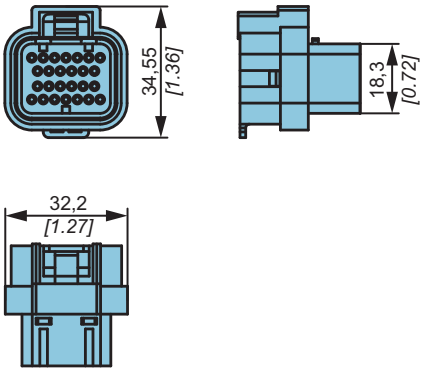
Wire section	0,75 to 1,25 mm² *[0.00116 to 0.00194 in²]*
Insulation diameter	for wire section 0,75 to 1,25 mm² *[0.00116 to 0.00194 in²]*: 1,6 to 2,4 mm *[0.063 to 0.094 in]*
Operating temperature	-40°C to 85°C *[-40°F to 185°F]*
Ingress Protection	IP67

Mounting tools for the connector

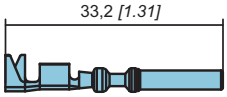
Description		AMP reference
Crimpers		1454509-1

Overall dimensions

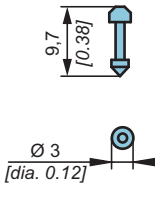
Connector: 3-1437290-7



Socket:3-1447221-3



Stopper: 4-1437284-3



3-PIN WEATHER PACK CONNECTOR

Commercial name	KIT CONNECTEUR CAPT CDE SA
Part number	007142212Z
Compatibility	Floor pedal. Suspended pedal. Swash plate sensor. Rotary potentiometer.

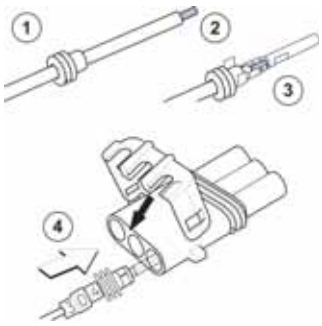
Features		
Manufacturer		Delphi
Components	3-way male connector	12015793
	3 female contacts	12089188
	3 seals	12015323
Wire section	0.5 to 0.8 mm^2	
Insulation diameter	2 to 2.9 mm	
Operating temperature	-40°C to +125°C *[-40°F to +257°F]*	
Ingress protection	IP 67	

Connector mounting

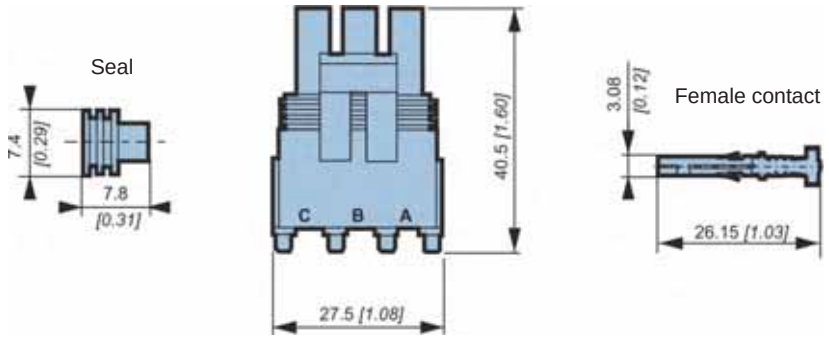
Locking device position

1. Fit a seal on each wire.
2. Strip 5 mm *[0.19 in]* off the wires.
3. Crimp the terminals with the 1201 4254 Packard Electric pliers, pinching the seal with the lug.
4. Plug the terminal into its compartment. If a terminal is wrongly inserted, use extraction tool Ref 1201 4012 to remove it.

   Fold down the connector latch.



Layout



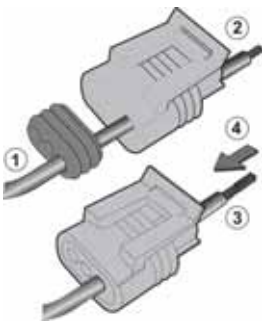
3-PIN METRI PACK CONNECTOR

Commercial name	KIT CONNECTEUR CAPT VIRAGE
Part number	007142222K
Compatibility	Floor pedal. Rotary potentiometer.

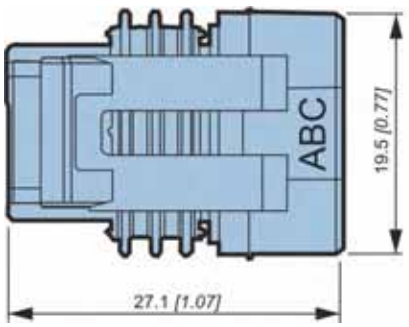
Features		
Manufacturer		Delphi
Components	3 terminal connector	1216 2182
	4 terminals	1212 4076
Wire section	0.35 to 0.60 mm^2	
Insulation diameter	1.30 to 2.20 mm	
Operating temperature	-40°C to +125°C *[-40°F to +257°F]*	
Ingress protection	IP 67	

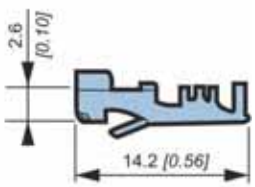
Connector mounting

1. Pass the wires through the connector.
2. Strip 5 mm from the wires.
3. Crimp the terminals with special tool 1203 9500.
4. Pull the wires towards the connector to fit the terminals into their housing.



Layout





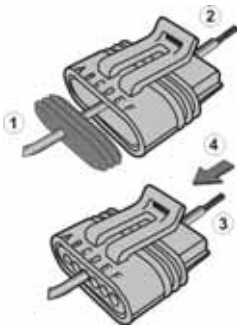
6-PIN METRI PACK CONNECTOR

Commercial name	KIT-CONNECT-6-PIN-MP
Part number	A38140G
Compatibility	Joystick with Z-gate Rotary potentiometer.

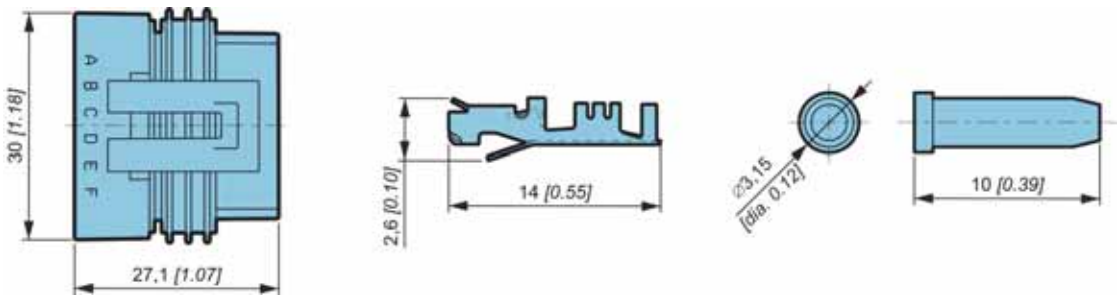
Features		
Manufacturer		Delphi
Components	Connector (1x)	1206 6317
	Pin (7x)	1210 3881
	Stopper (3x)	1206 5266
Wire section	0,8 to 1,0 mm^2	
Insulation diameter	2,03 to 2.40 mm	
Operating temperature	-40°C to +125°C *[-40°F to +257°F]*	
Ingress protection	IP 67	

Connector mounting

1. Pass the wires through the connector.
2. Strip 5 mm from the wires.
3. Crimp the terminals with special tool 1203 9500.
4. Pull the wires towards the connector to fit the terminals into their housing.



Layout



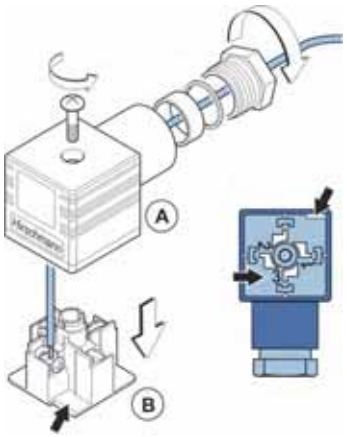
EN 175301 - 803 STYLE A CONNECTOR

Commercial name	KIT CONNECT CDE SA
Part number	007142211X
Compatibility	Proportional control electro-valve. Electro-valve solenoid control.

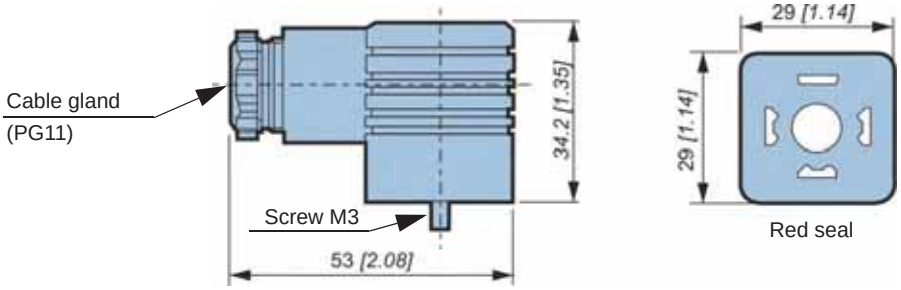
Features	
Manufacturer	Hirschmann
Standard	EN 175301 - 803 style A (DIN43650)
Components	2 connectors GDM 2011 with 2 screws and 2 seals GDM-3-17
Max. currrent	16 A
Max. voltage	250 V (AV)
Wire section	max. 1.5 mm^2
Cable diameter	6 mm *[0.24 in]* to 9 mm *[0.35 in]*
Operating temperature	-40°C to +125°C *[-40°F to +257°F]*
Ingress Protection	IP65

Connector mounting

1. Unscrew the packing gland and the screw.
2. Open the connector with a flat-headed screwdriver inserted in part B of the slot.
   Strip the wire over a length of 5 mm *[0.19 in]*.
   Pass the wire through the gland, then through the cover A.
   Plug the wire into B. Wire No.3 has to be earthed.
3. Re-assemble B and A: The "3" mark has to be nearest the gland.
   Refit the packing gland and the screw.



Layout



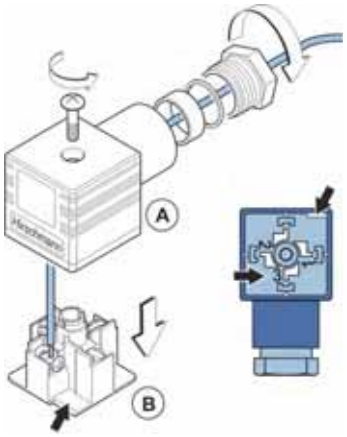
EN 175301 - 803 STYLE A CONNECTOR WITH DIODE

Commercial name	CONNECTOR-GDML-DIODE
Part number	A37605A
Compatibility	On/Off control electro-valve.

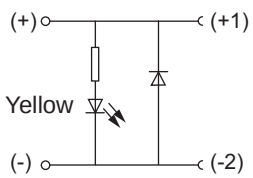
Features	
Manufacturer	Hirschmann
Standard	EN 175301 - 803 style A (DIN43650)
Components	1 connector GDML 2011 LED 24 HH YE with screw + 1 seal GDM 3-7
Max. current	8 A
Max. voltage	24 V DC (use 12 V and 24 V DC)
Wire section	max. 1.5 mm^2
Cable diameter	4.5 to 11 mm
Operating temperature	-40°C to +90°C *[-40°F to +194°F]*
Ingress Protection	IP65

Connector mounting

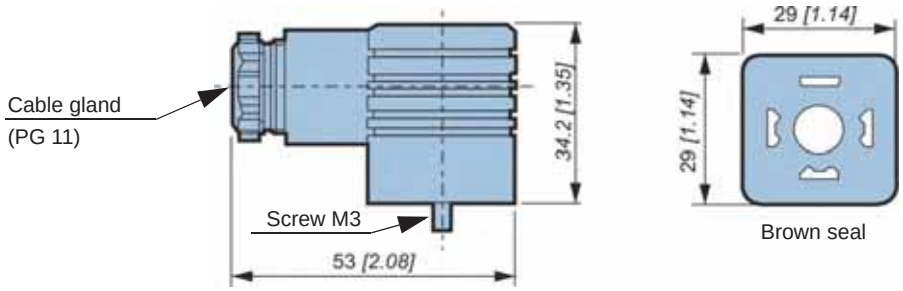
1. Unscrew the packing gland and the screw.
2. Open the connector with a flat-headed screwdriver inserted in part B of the slot.
   Strip the wire over a length of 5 mm *[0.19 in]*.
   Pass the wire through the gland, then through the cover A.
   Plug the wire into B. Wire No.3 has to be earthed.
3. Re-assemble B and A: The "3" mark has to be nearest the gland.
   Refit the packing gland and the screw.



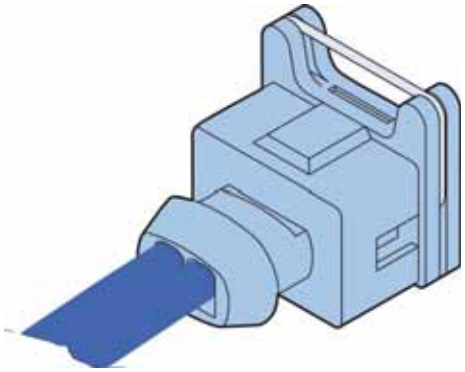
You should respect the polarity as shown in the diagram below.



Layout


Cable gland
(PG 11)
Screw M3
53 [2.08]
34.2 [1.35]
29 [1.14]
29 [1.14]
Brown seal

2-PIN AMP TIMER JUNIOR CONNECTOR

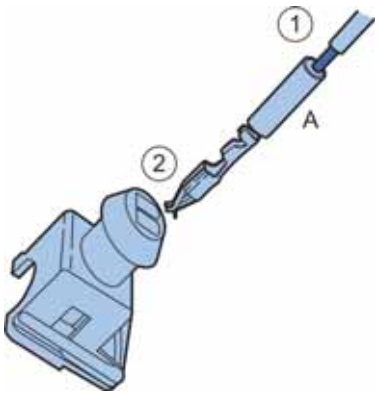


Commercial name	VMA CONNECTOR VALVE KIT
Part number	007142206S
Compatibility	In-line valve. Flanged valve.

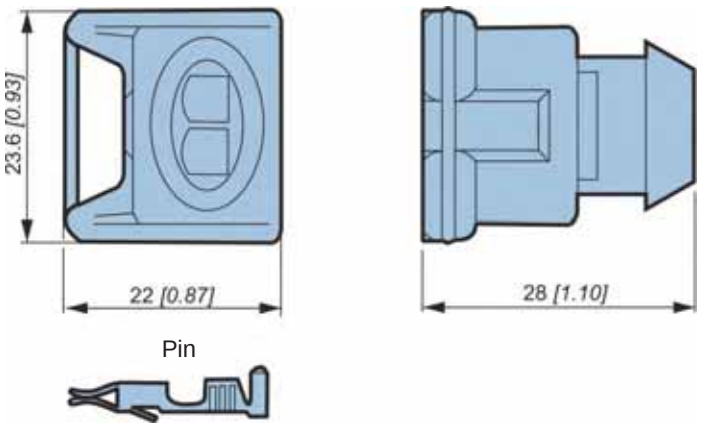
Features		
Manufacturer		AMP
Components	3 contacts	927 846 - 2
	Body connector	827 551 - 3
Wire section	0.5 to 1 mm^2	
Insulation diameter	1.4 to 2.1 mm	

Connector mounting

1. Strip 5 mm *[0.19 in]* of insulation off the cables. Crimp the lugs using an AMP CERTI-LOCK 169400 tool. Protect the connection with heat-shrink tubing (A), or Rislon fixed plastic tubing.
2. Refer to your general wiring diagram, inserting each lug into its housing until it clicks into place.



Layout



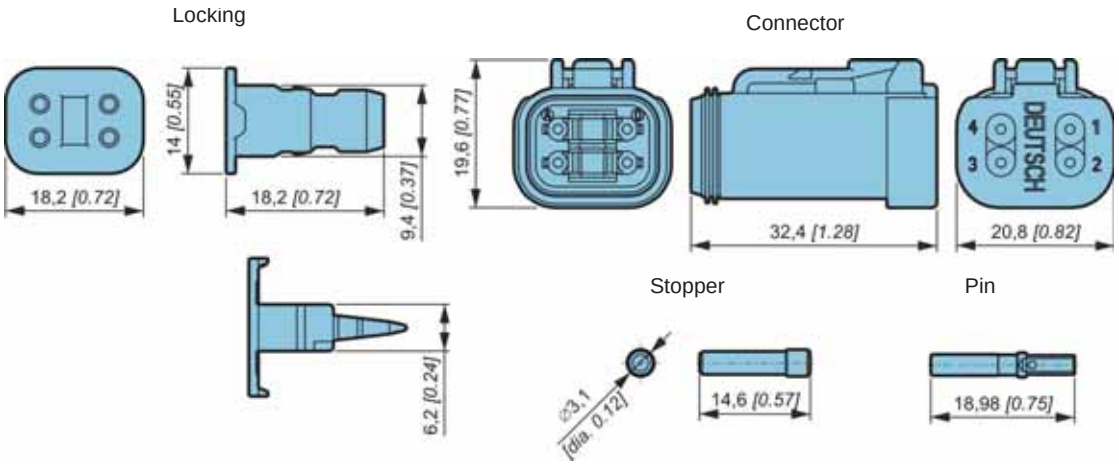
4-PIN DEUTSCH CONNECTOR

Commercial name	KIT-CONNECT-4-PIN-DEUTSCH
Part number	A39961L
Compatibility	Joystick with Z-gate

Features		
Manufacturer		DEUTSCH
Components	Connector (1x)	DT06-4S-EP06
	Pin (5x)	0462-201-16141
	Stopper (1x)	114017
	Locking (1x)	W4S-P012
Wire section	0,5 to 1,0 mm^2	
Insulation diameter	2,23 to 3.68 mm	
Operating temperature	-55°C to +125°C *[-67°F to +257°F]*	
Ingress protection	IP 67	

Mounting tools	
Crimpers	HDT-48-00

Layout

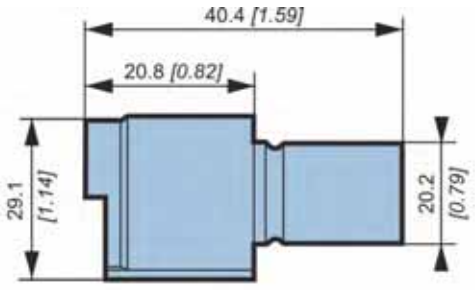


CONNECTOR ACTUATOR

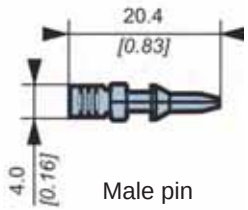
Commercial name	KIT CONNECT ACTIONNEUR
Part number	007142219G
Compatibility	Actuator

Features		
Manufacturer		ITT Cannon
Components	Female connector	120-8551-007
	Manchon	317-8657-000
	3 males pin	330-8672-000
	4 femals pin	031-8703-000
Wire range	0.75 to 1.5 mm^2	
Cable diameter	7.2 to 8.4 mm	
Wire insulation diameter	1.8 to 2.8 mm	

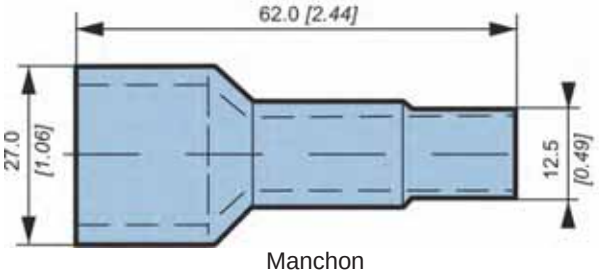
Layout



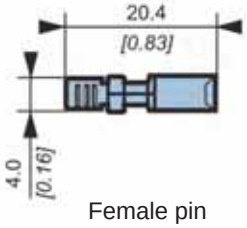
Female connector



Male pin



Manchon



Female pin

4-PIN DIN72585 IP6K9K CONNECTOR

Commercial name	KIT-CONNECT-4-PIN-DIN72585
Part number	B02394B
Compatibility	Pressure sensor IP6K9K Temperature sensor IP6K9K

Features		
Manufacturer		Tyco
Components	1 DIN connector socket4	1-967325-1
	1 Cap 90° NW8.5	965577-1
	4 Socket contacts	962981-1
	4 Single wire seals	828920-1
	2 Cavity plugs	828922-1
Wire section	0.5 to 1mm²	
Insulation diameter	1.2 to 2.1 mm *[0.05 to 0.11 in]*	
Operating temperature	-40°C to +130°C *[-40°F to 257°F]*	
Ingress protection	IP6K9K	

Mounting tool

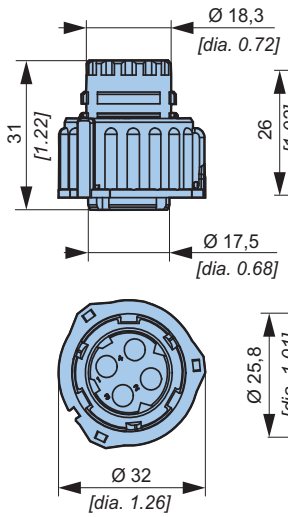
toCrimp tool :AMP 734289-1

Connector mounting

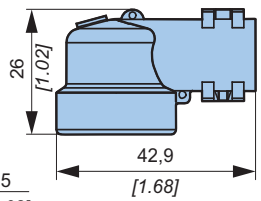
1. Fit a seal on each wire
2. Strip 5 mm *[0.19 in]* off the wires.
3. Crimp the socket contacts with the 734289-1 hand tool pliers in position 2 for wire range 0.5 to 1mm², pinching the seal with the lug.
4. Plug the terminal into its compartment. If a terminal is wrongly inserted, use extraction tool AMP Ref. 1-1579007-8 to remove it.

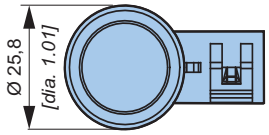
Layout

DIN connector socket 4 pins

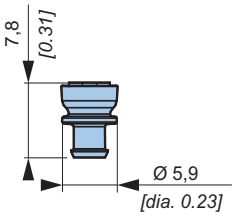


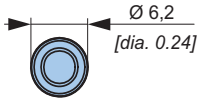
Cap 90° NW8.5



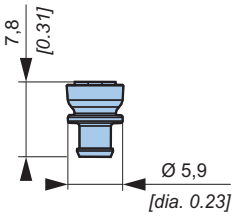


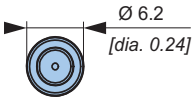
Cavity plug



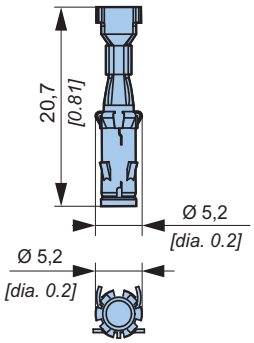


Single wire seal





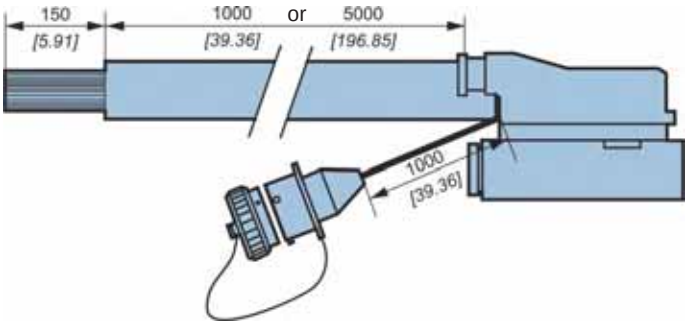
Socket contact 2,5 mm



SMARTDRIVE™ EASY CABLE

Commercial name	CABLE-SD-EASY-42-1000	CABLE-SD-EASY-42-5000
Part number	A20311C	A20313E
Function	Connect a SmartDrive™ Easy Plus or SmartDrive™ Auto ECU to the machine wiring and have a male communication connector.	
Compatibility	Electronic transmission management with SmartDrive™ Easy Plus or SmartDrive™ Auto ECU.	
Features		
Lenght of cable	1m	5m
Material	PVC	
Number of wires	42	
Sections of wires	$1mm^2$	

Layout



Electrical wiring

The wires of the cable are numbered.

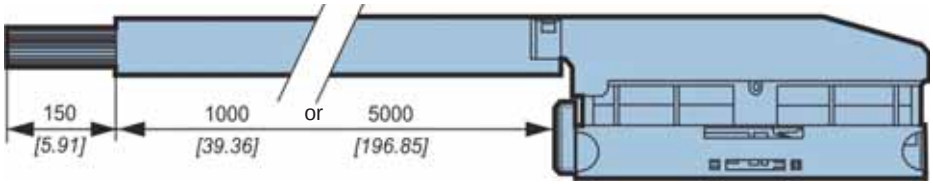
Pin	Wire
1	1
2	2
⋮	⋮
26	Not connected
27	Not connected
⋮	⋮
42	42

The non used wires should be individually insulated because of possible voltage.

SMARTDRIVE™ MASTER CABLE

Commercial name	CABLE-SD-MASTER-56-1000	CABLE-SD-MASTER-56-5000
Part number	A20309A	A20310B
Function	Connect a SmartDrive™ Master ECU or a SmartDrive™ Premier ECU (J1) to the machine wiring	
Compatibility	Electronic transmission management with SmartDrive™ Master ECU or SmartDrive™ Premier ECU	
Features		
Lenght of cable	1m	5m
Material	PVC	
Number of wires	56	
Sections of wires	$1mm^2$	

Layout



Electrical wiring

The wires of the cable are numbered.

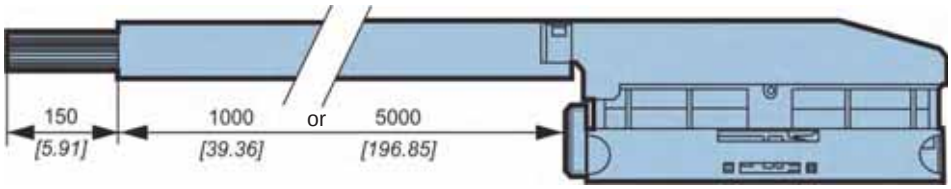
Pin	Wire
1	1
2	2
3	3
⋮	⋮
55	55
56	green/yellow

The non used wires should be individually insulated because of possible voltage.

SMARTDRIVE™ OFF-ROAD CABLE

Commercial name	CABLE-SD-OFFROAD-56-1000	CABLE-SD-OFFROAD-56-5000
Part number	A22473C	A22475E
Function	Connect a SmartDrive™ Off-Road ECU or a SmartDrive™ Premier ECU (J2) to the machine wiring	
Compatibility	Electronic transmission management with SmartDrive™ Off-Road ECU or SmartDrive™ Premier ECU	
Features		
Lenght of cable	1m	5m
Material	PVC	
Number of wires	56	
Sections of wires	$1mm^2$	

Layout



Electrical wiring

The wires of the cable are numbered.

Pin	Wire
1	1
2	2
3	3
⋮	⋮
55	55
56	green/yellow

The non used wires should be individually insulated because of possible voltage.

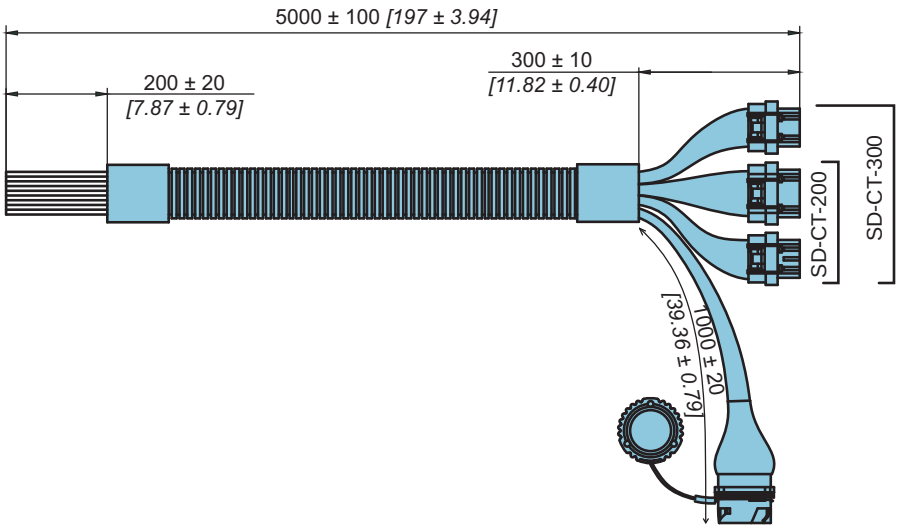
SMARTDRIVE™ CT CABLE

Commercial name	CABLE-SD-CT-200-60-5000	CABLE-SD-CT-300-86-5000
Part number	A48878D	A48877C
Function	Connect SmartDrive™ CT ECU to the machine wiring and have a male communication connector.	
Compatibility	Transmission management with SmartDrive™ CT ECU.	
Features		
Length of cable	5m	5m
Operating temperature	- 40°C to 85°C [-40 °F to 185°F]	
Ingress protection	IP67 according to IEC 60529	
Number of wires	60	86
Wire section	0,75 mm² *[0.029 in²]* for signals 1 mm² [*0.039 in²*] for VBAT_P and power outputs 1,25 mm² [*0.049 in²*] for VBAT_D1, VBAT_D2, VBAT_D3 and -VBAT	
Insulation diameter	1,6 to 2,2 mm *[0.063* to *0.086 in]*	

Each wire is numbered with locating pin and connector.
For the CAN bus, the identification is performed by different colour for each pin. (see table - CAN Wire colour)

CAN Wire colour	
Function	Colour
CAN1_High	White
CAN1_Low	Green
CAN2_High	White
CAN2_Low	Red
CAN3_High	White
CAN3_Low	Blue

Dimensions

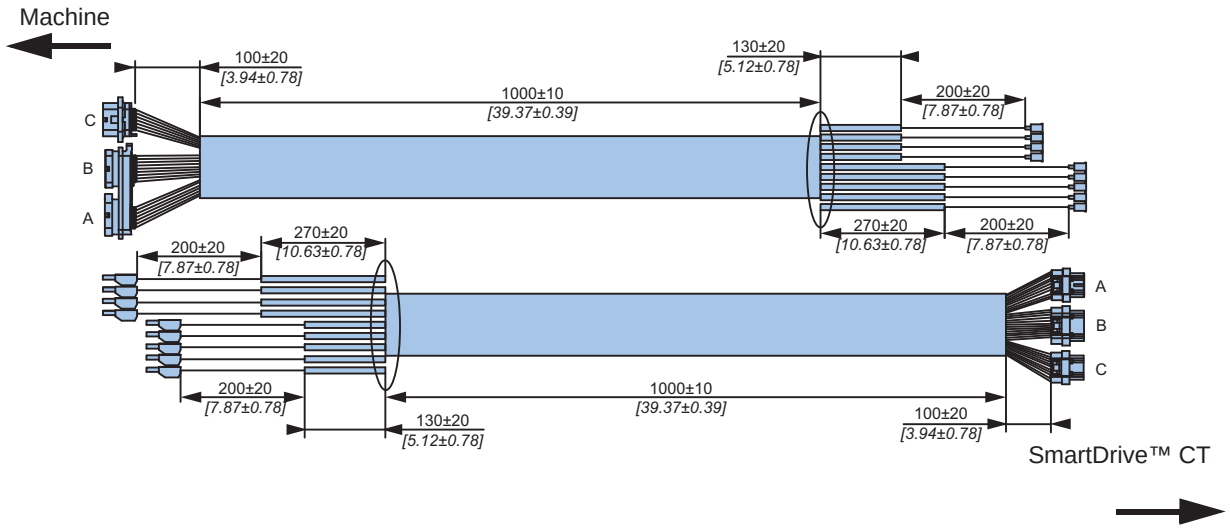


The non used wires should be individually insulated because of possible voltage.

SMARTDRIVE™ CT TEST CABLE

Commercial name	CABLE-TEST-BOX-86-WAY-CT300
Part number	B04164A
Function	Check the wiring by isolation each wire between the machine and the Electronic Unit (workshop use)
Compatibility	Transmissions controlled by a unit in the SmartDrive™ CT range
Features	
Lenght of cable	3000 mm
Maximum volatge	32 VDC
Operating Temperature	-40 °C to 80 °C *[-40 °F to 176 °F]*
Material	PVC for wires, Polyester for Braided sheath
Number of wires	86
Section of wires	1 mm²

Layout



Electrical wiring

The wires of the cable are numbered and have different colors

Connector A SD-CT300		
Number PIN	Number wire	Color wire
1	A-1	Green
2	A-2	Green
3	A-3	Green
4	A-4	Green
5	A-5	Green
6	A-6	Green
7	A-7	Green
8	A-8	Green
9	A-9	Green
10	A-10	Brown
11	A-11	Brown
12	A-12	Brown
13	A-13	Brown
14	A-14	Brown
15	A-15	Brown
16	A-16	Brown
17	A-17	Brown
18	A-18	Brown
19	A-19	Brown
20	A-20	Red
21	A-21	Red
22	A-22	Red
23	A-23	Red
24	A-24	Red
25	A-25	Red
26	A-26	Red

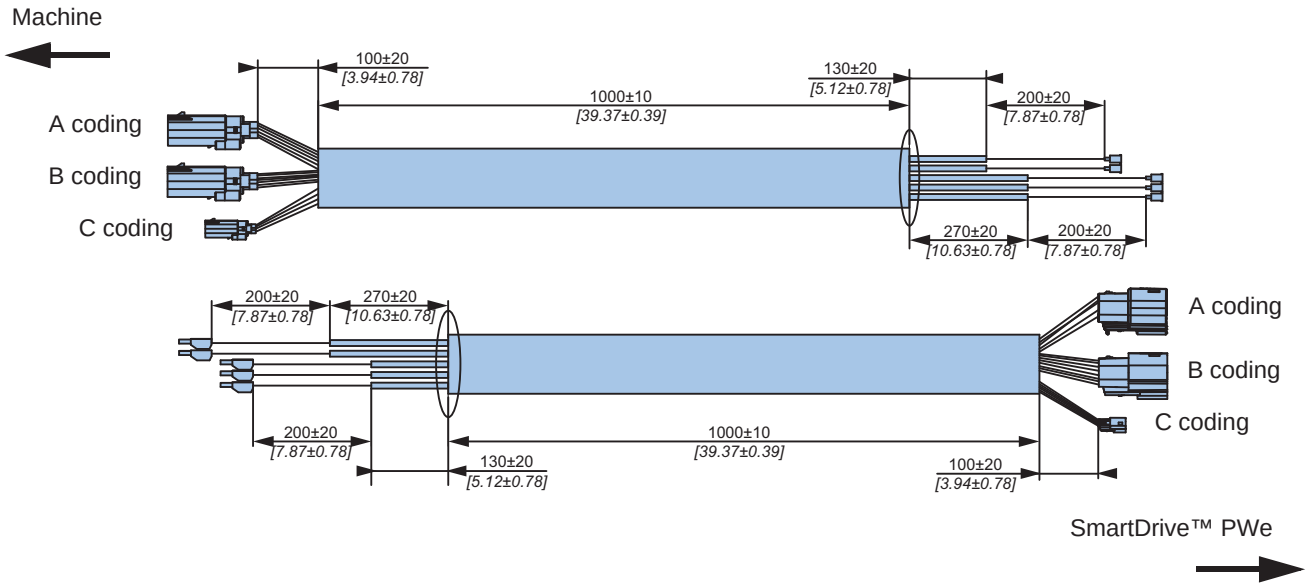
Connector A SD-CT300		
Number PIN	Number wire	Color wire
61	C-1	Orange
62	C-2	Orange
63	C-3	Orange
64	C-4	Orange
65	C-5	Orange
66	C-6	Orange
67	C-7	Orange
68	C-8	Orange
69	C-9	Orange
70	C-10	White
71	C-11	White
72	C-12	White
73	C-13	White
74	C-14	White
75	C-15	White
76	C-16	White
77	C-17	White
78	C-18	White
79	C-19	White
80	C-20	Grey
81	C-21	Grey
82	C-22	Grey
83	C-23	Grey
84	C-24	Grey
85	C-25	Grey
86	C-26	Grey

Connector B SD-CT300		
Number PIN	Number wire	Color wire
27	B-1	Red
28	B-2	Red
29	B-3	Red
30	B-4	Yellow
31	B-5	Yellow
32	B-6	Yellow
33	B-7	Yellow
34	B-8	Yellow
35	B-9	Yellow
36	B-10	Yellow
37	B-11	Yellow
38	B-12	Yellow
39	B-13	Yellow
40	B-14	Black
41	B-15	Black
42	B-16	Black
43	B-17	Black
44	B-18	Black
45	B-19	Black
46	B-20	Black
47	B-21	Black
48	B-22	Black
49	B-23	Black
50	B-24	Blue
51	B-25	Blue
52	B-26	Blue
53	B-27	Blue
54	B-28	Blue
55	B-29	Blue
56	B-30	Blue
57	B-31	Blue
58	B-32	Blue
59	B-33	Blue
60	B-34	Orange

SMARTDRIVE™ PWE TEST CABLE

Commercial name	CABLE-TEST-BOX-42-WAY-PWE
Part number	B04166C
Function	Check the wiring by isolation each wire between the machine and the Electronic Unit (workshop use)
Compatibility	Transmissions controlled by a unit in the SmartDrive™ PWE
Features	
Lenght of cable	3000 mm
Maximum voltage	32 VDC
Operating Temperature	-40 °C to 80 °C *[-40 °F to 176 °F]*
Material	PVC for wires, Polyester for Braided sheath
Number of wires	42
Section of wires	1 mm²

Layout



Electrical wiring

The wires of the cable are numbered and have different colors

Connector Molex A codding		
Number wire	Number pin	Color wire
A-1	**1**	Green
A-2	**2**	Green
A-3	**3**	Green
A-4	**4**	Green
A-5	**5**	Green
A-6	**6**	Green
A-7	**7**	Green
A-8	**8**	Green
A-9	**9**	Green
A-10	**10**	Brown
A-11	**11**	Brown
A-12	**12**	Brown
A-13	**13**	Brown
A-14	**14**	Brown
A-15	**15**	Brown
A-16	**16**	Brown
A-17	**17**	Brown
A-18	**18**	Brown
A-19	**19**	Brown
A-20	**20**	Red

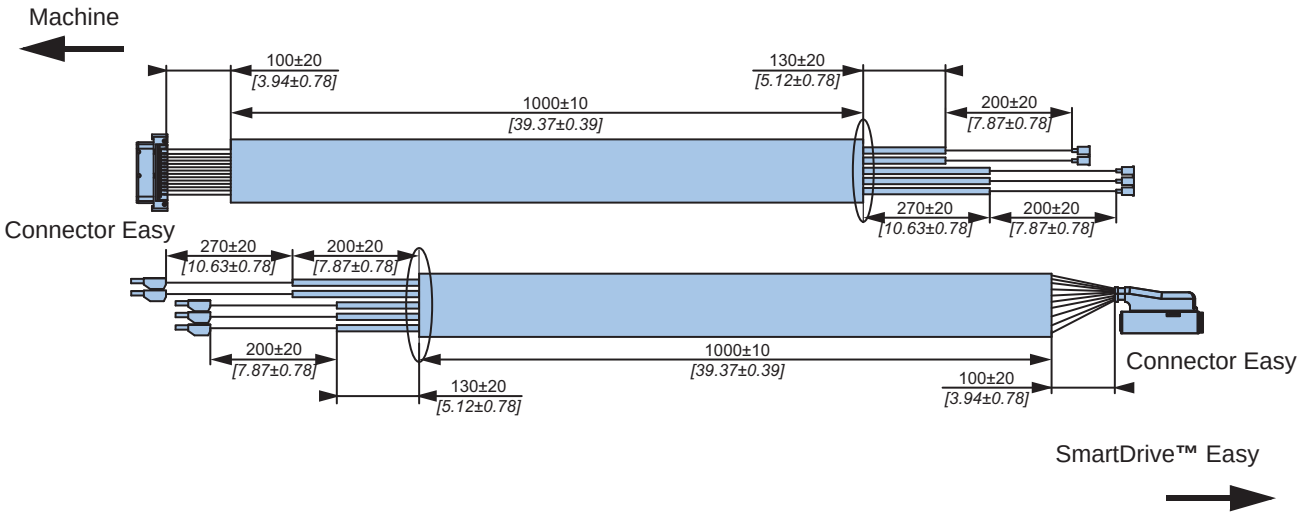
Connector Molex B coding		
Number PIN	Number wire	Color wire
B-1	**1**	Red
B-2	**2**	Red
B-3	**3**	Red
B-4	**4**	Yellow
B-5	**5**	Yellow
B-6	**6**	Yellow
B-7	**7**	Yellow
B-8	**8**	Yellow
B-9	**9**	Yellow
B-10	**10**	Yellow
B-11	**11**	Yellow
B-12	**12**	Yellow
B-13	**13**	Yellow
B-14	**14**	Yellow
B-15	**15**	Yellow
B-16	**16**	Yellow
B-17	**17**	Yellow
B-18	**18**	Yellow
B-19	**19**	Yellow
B-20	**20**	Black

Connector Molex C coding		
Number PIN	Number wire	Color wire
C-1	**1**	Black
C-2	**2**	Black

SMARTDRIVE™ EASY TEST CABLE

Commercial name	CABLE-TEST-BOX-42-WAY-EASY
Part number	B04162X
Function	Check the wiring by isolation each wire between the machine and the Electronic Unit (workshop use)
Compatibility	Transmissions controlled by a unit in the SmartDrive™ EASY range
Features	
Lenght of cable	3000 mm
Maximum voltage	32 VDC
Operating Temperature	-40 °C to 80 °C *[-40 °F to 176 °F]*
Material	PVC for wires, Polyester for Braided sheath
Number of wires	42
Section of wires	1 mm²

Layout



Electrical wiring

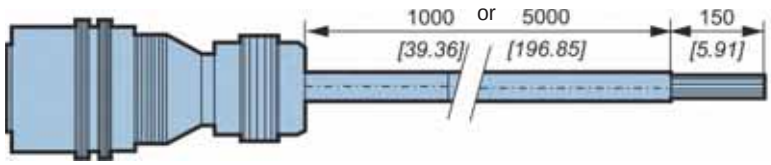
The wires of the cable are numbered and have different colors

Connector Easy		
Number wire	Number pin	Color wire
1	1	Green
2	2	Green
3	3	Green
4	4	Green
5	5	Green
6	6	Green
7	7	Green
8	8	Green
9	9	Green
10	10	Brown
11	11	Brown
12	12	Brown
13	13	Brown
14	14	Brown
15	15	Brown
16	16	Brown
17	17	Brown
18	18	Brown
19	19	Brown
20	20	Red
21	21	Red
22	22	Red
23	23	Red
24	24	Red
25	25	Red
26	26	Red
27	27	Red
28	28	Red
29	29	Red
30	30	Yellow
31	31	Yellow
32	32	Yellow
33	33	Yellow
34	34	Yellow
35	35	Yellow
36	36	Yellow
37	37	Yellow
38	38	Yellow
39	39	Yellow
40	40	Black
41	41	Black
42	42	Black

SMARTDRIVE™ COMMUNICATION CABLE

Commercial name	COM-CABLE-SD-1000	COM-CABLE-SD-5000
Part number	A20360F	A20361G
Function	Connect a SmartDrive™ ECU communication elements to the machine wiring	
Compatibility	Electronic transmission management with SmartDrive Easy Plus, SmartDrive Auto, SmartDrive Premier, SmartDrive Master, Smart Drive Offroad.	
Features		
Lenght of cable	1m	5m
Material	PVC	
Number of wires	14	
Sections of wires	0.22mm^2	

Layout



Electrical wiring

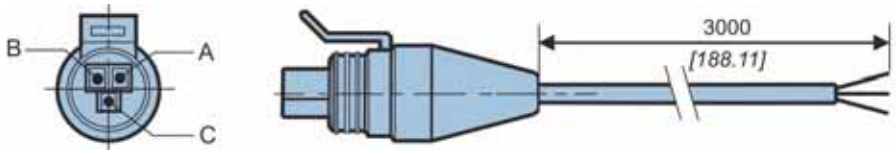
Pin	Wire
A	White
B	Brown
C	Green
D	Yellow
E	Gray
F	Pink
H	Blue
J	Red
K	Black
L	Violet
M	Gray/Pink
N	Red/Blue
P	White/Green
R	Brown/Green

The non used wires should be individually insulated because of possible voltage.

PRESSURE SENSORS CABLE

Commercial name	CABLE-PRESSURE-SENSOR-3M
Part number	003141105U
Features	
Lenght of cable	3 m
Material	PVC
Number of wires	3
Sections of wires	0.5 mm^2

Layout



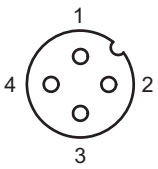
Electrical wiring

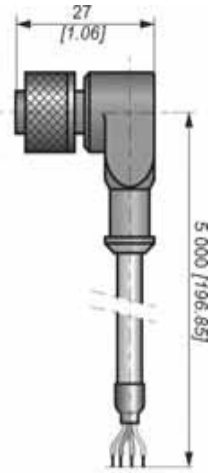
Pin	Wire
A	Green
B	Brown
C	White

4-PIN M12 CABLE

Commercial name	ELEC-CABLE-M12-180°-5000	ELEC-CABLE- M12-90°-5000
Part number	A07468S	A04999J
Compatibility	Speed sensor, digital sensor and temperature sensor.	
Features		
Lenght of cable	5 m	
Material	PUR	
Number of wires	4	
Sections of wires	0.34 mm^2	
Protection	IP68	

Layout	180°	90°





Connector Mounting

Securely hand tighten the cable's ring to sensor connector M12.

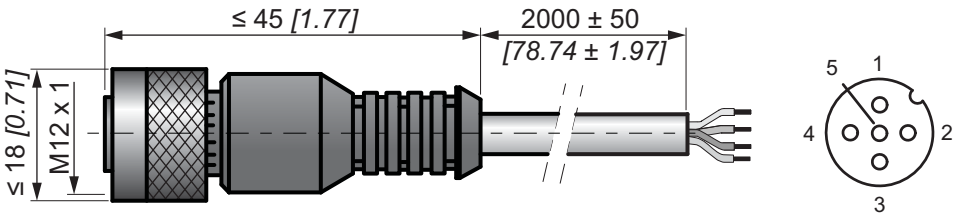
Electrical wiring

Pin	Wire
1	Brown
2	White
3	Blue
4	Black

5-PIN M12 CABLE

Commercial name	CABLE-M12-180°-2000-5PT
Part number	A19974L
Compatibility	Display 1.5
Features	
Lenght of cable	2 m
Material	PUR
Number of wires	5
Sections of wires	0.34 mm^2
Protection	IP68

Layout



Connector Mounting

Securely hand tighten the cable's ring to sensor connector M12.

Electrical wiring

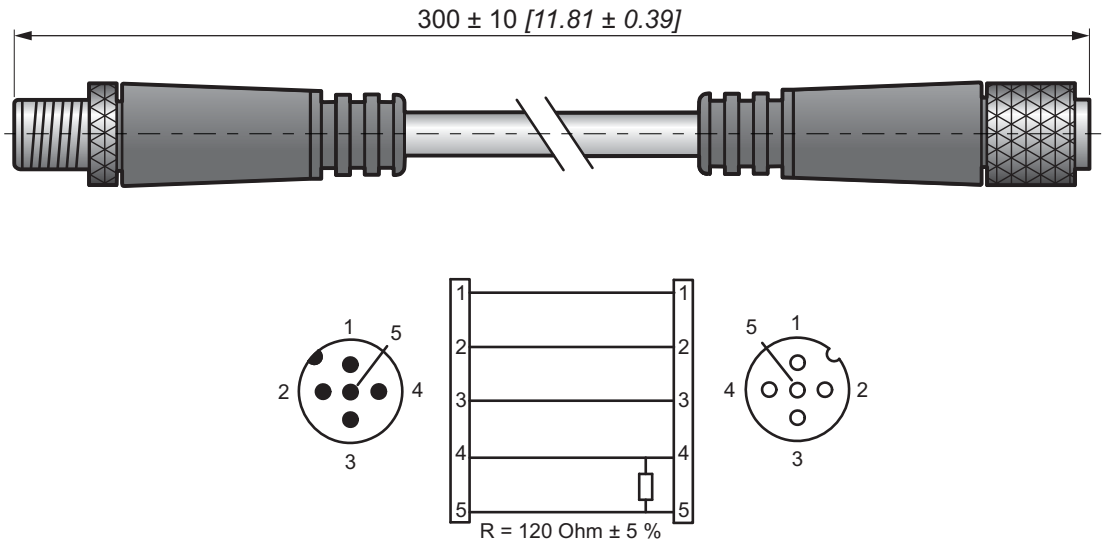
Pin	Wire
1	Brown
2	White
3	Blue
4	Black
5	Grey or Green-yellow

5-PIN M12 120 OHM CABLE

Commercial name	CABLE-COM-M12-CAN-120
Part number	A25657N
Function	120 ohm termination resistor for CAN bus
Compatibility	Display 1.5

Features	
Lenght of cable	0,3 m
Material	PUR
Number of wires	5
Sections of wires	0.34 mm^2
Protection	IP67

Layout



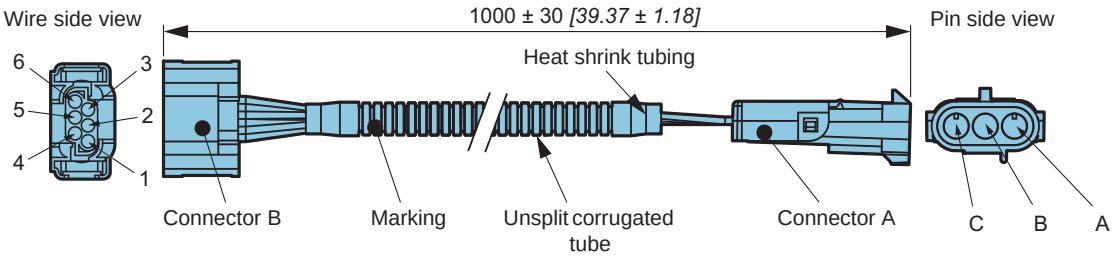
Connector Mounting

Securely hand tighten the cable's ring to sensor connector M12.

1 SIGNAL PEDAL CONNECTION CABLE

Commercial name	CABLE-AMP-65-WP-3P-1000
Part number	A51444S
Function	Connect to the pedal and use only 1 signal.
Compatibility	Electronic transmission management withSmartDrive™.
Features	
Lenght of cable	1 m
Material	corrugated tube + wires
Number of wires	3
Sections of wires	AWG20
Operating temperature	- 40°C + 85°C *[- 40°F + 185°F]*
Corrugated tube material	PA

Layout



Electrical wiring

Connector A:	Packard Electric
Connector:	12010717
Terminal:	12089040
Wire seal:	12015899
Connector B:	AMP
Connector:	1-967616-1
Terminal:	0-962885-5
Wire seal:	0-0967067-1
Cavity plug:	967056-1

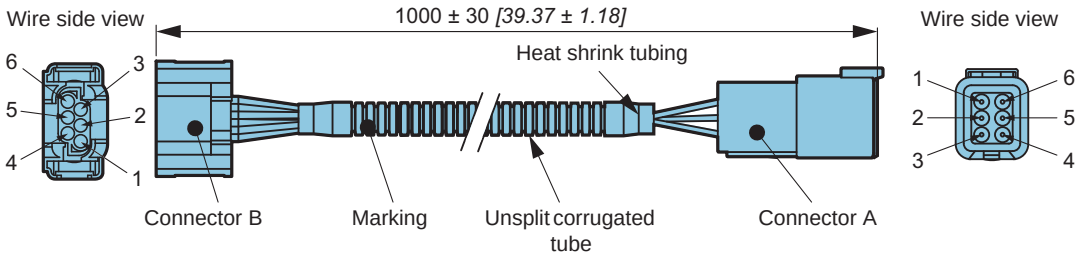
Pin allocation of connectors

Connector B	Connector A	Wire color
1	C	red
2	B	black
3	A	white
4	-	-
5	-	-
6	-	-

2 SIGNAL PEDAL CONNECTION CABLE

Commercial name	CABLE-AMP-65-DTM-6P-1000
Part number	A51445T
Function	Connect to the pedal and use 2 signals.
Compatibility	Electronic transmission management with SmartDrive™.
Features	
Lenght of cable	1 m
Material	corrugated tube + wires
Number of wires	6
Sections of wires	AWG20
Operating temperature	- 40°C + 85°C *[- 40°F + 185°F]*
Corrugated tube material	PA

Layout



Electrical wiring

Connector A:	DEUTSCH
Connector:	DTM04-6P
Terminal:	0460-202-2031
Wedgelock:	WM-6P
Connector B:	AMP
Connector:	1-967616-1
Terminal:	0-962885-5
Wire seal:	0-0967067-1
Cavity plug:	967056-1

Pin allocation of connectors

Connector B	Connector A	Wire color
2	1	white
4	2	black
1	3	red
5	4	blue
3	5	green
6	6	orange

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